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MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING •

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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Guaranteed Circulation This Issue

13,725 of Which 9,912 is Paid

SPRING CONSTRUCTION—RURAL ISSUE

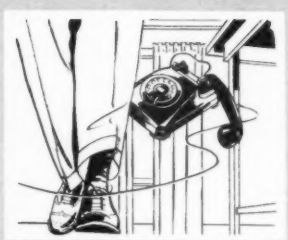
5 situation

nwhich won't harm a Stromberg-Carlson dial

(even though subscribers do them all)

The plastic dust cover (originated by us in 1947) keeps dirt, insects and the like where they belong—outside! And it's never removed in ordinary circumstances because the terminal connections are outside the cover. BUT an ingenious "trap door" gives instant access to the interior when necessary.

The number plate is double-tough plastic and the finger plate is enamel-finished metal. Stands up under abuse that would make ordinary plates cry "uncle"!



The whole dial mechanism is mounted on a rigid, die-cast aluminum housing—keeping moving parts in perfect alignment. It takes one heck of a jar or fall to put a Stromberg-Carlson dial out of kilter.

Curious folks can take an alarm clock apart more easily than one of these dials. The digit number plate is securely *locked* into the housing rim. Your maintenance man, however, has to remove only one screw.

The Stromberg-Carlson dial welcomes continuous usage. You see, wind-up moves only the main and secondary shafts—the other parts are in motion only for impulsing. The saving in wear-and-tear is obvious.

Conclusion: Maintenance costs are greatly reduced when the dials you use are ruggedly engineered. That's the only kind we make! Ask your nearest branch for complete details.

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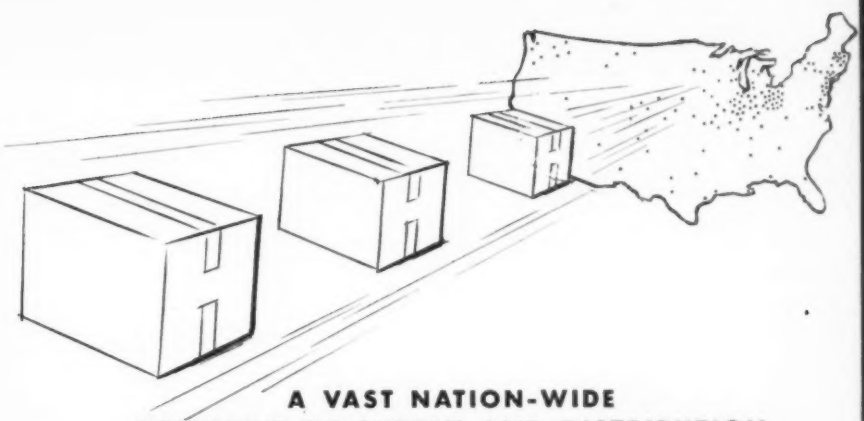

A VAST NATION-WIDE NETWORK OF SUPPLY AND DISTRIBUTION POINTS FOR FASTER, LOWER COST DELIVERIES

Six Branch Warehouses and over 100 Supplier Distribution Points enable us to ship your order to the location nearest you. For emergencies or everyday operations, with Kellogg's "next-door-neighbor" Line Supply Service, you get the materials you need faster and at a savings in shipping costs.

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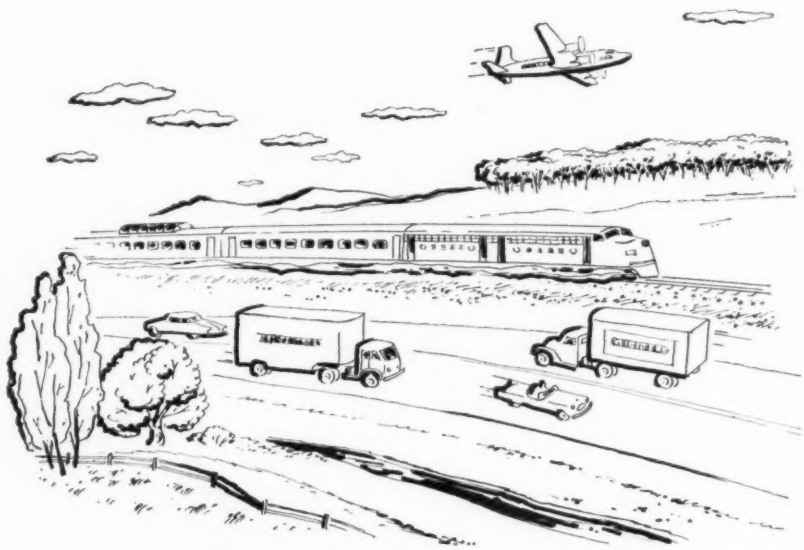

• Kellogg's six conveniently located warehouses and more than 100 supplier distribution points throughout the United States assure you the fastest, and most economical delivery of guaranteed, factory-tested line supplies.

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Sales Offices: 79 West Monroe Street, Chicago 3, Illinois

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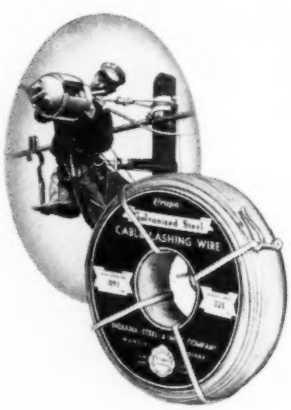
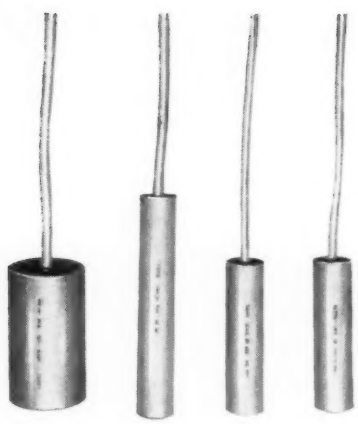
These Double-Faced Signs are made of long-life porcelain enamel fused to heavy gauge steel. Clear visibility and permanent, bright colors are features of signs made by INGRAM-RICHARDSON MANUFACTURING CO. Available in either plain or activated surface.



Cable Lashing Wire for use with modern Cable Spinners. Crapo Galvanized ("C" Coated) Lashing Wire available in .091" and .061" diameters. This "Stainless Steel" Lashing Wire is also available in .045" and .065" diameters. Made by INDIANA STEEL & WIRE CO.



Application of Loading Coils on telephone circuits, reduces unit loss to ⅛ or ¼ the non-loaded value—coils are designed for use on 2-wire telephone circuits in non-quadded paper insulated or plastic cable. COMMUNICATION EQUIPMENT & ENGINEERING CO.

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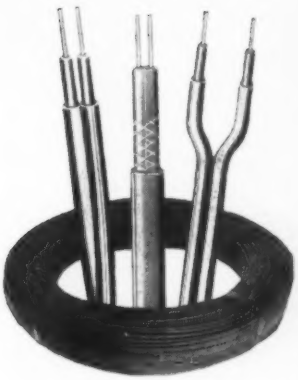
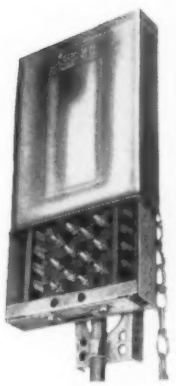


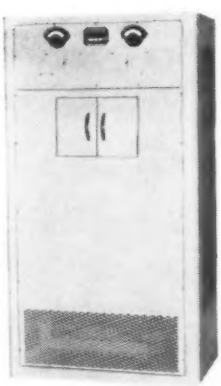
Long Service Life and Low Plant Costs go hand-in-hand with the installation of ENDURPRENE — The Neoprene Drop Wire available in both Copperweld and Bronze. This flexible and easy to handle wire is made by GENERAL INSULATED WIRE WORKS, INC.

• • •

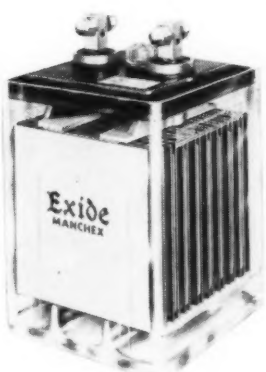


The Type XB Unprotected Cable Terminal features a Bakelite face plate and insulating fanning strip moulded in one piece, with Everdur studs positioned for easy wiring. Available in 6, 11, 16 and 26 pair size, with or without cable stub. COOK ELECTRIC COMPANY.

for Line Supplies



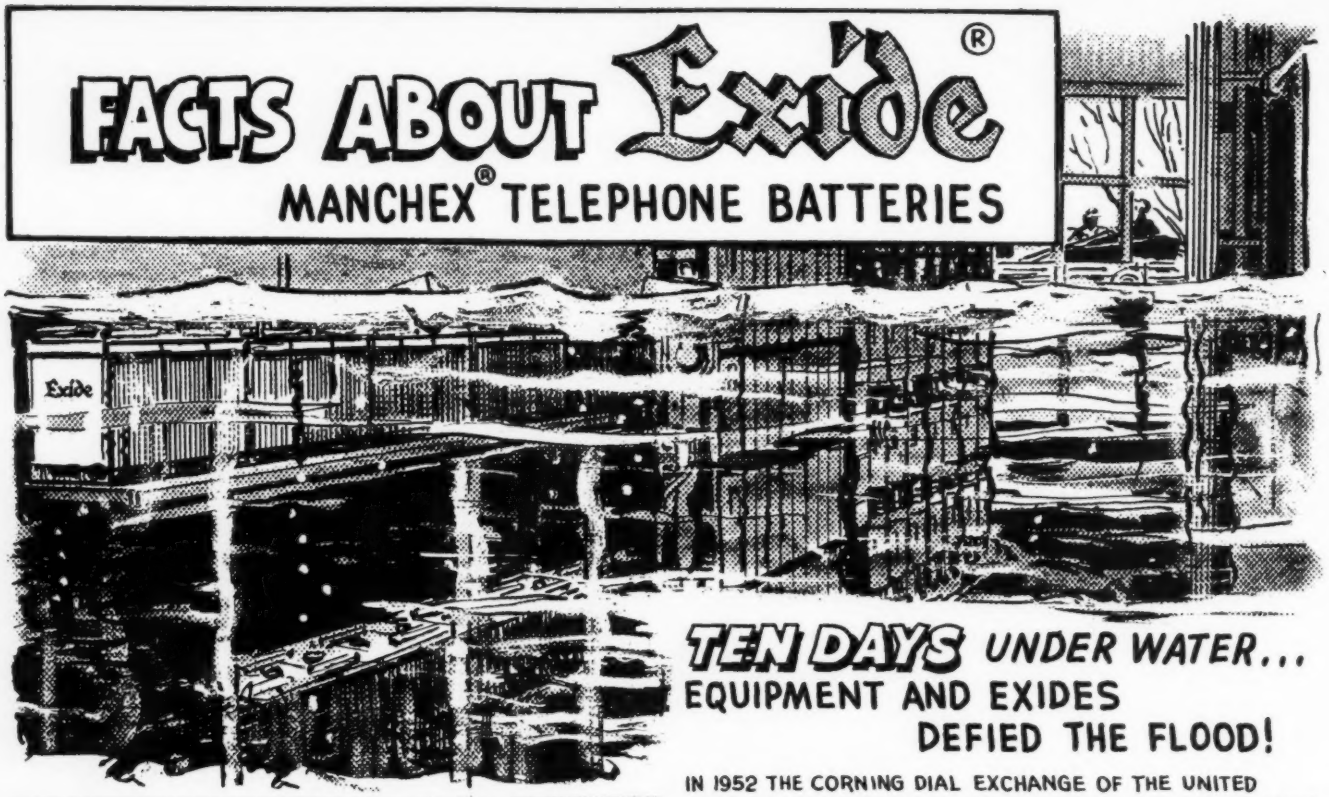
Self-Contained Unit—The 3-phase Flotrol Automatic Constant Voltage Battery charger has no moving parts—all components in one cabinet. No separate units to install. Designed for plants requiring 25 to 400 amps charging capacity. LORAIN PRODUCTS CORP.



Time Proven—for 62 years Exide Batteries have served the telephone industry—the Manchester Positive plate with its button type construction provides long life. Exide meets all battery requirements. Exide Industrial Div., ELECTRIC STORAGE BATTERY CO.

Tailored for Needs of Telephone Industry—the 630-T Volt-Ohm Milliammeter is designed for work inside on panel, checking circuits on poles, etc. Supplied with adjustable neck strap, hand strap and special test leads. The TRIPLETT ELECTRICAL INSTRUMENT CO.

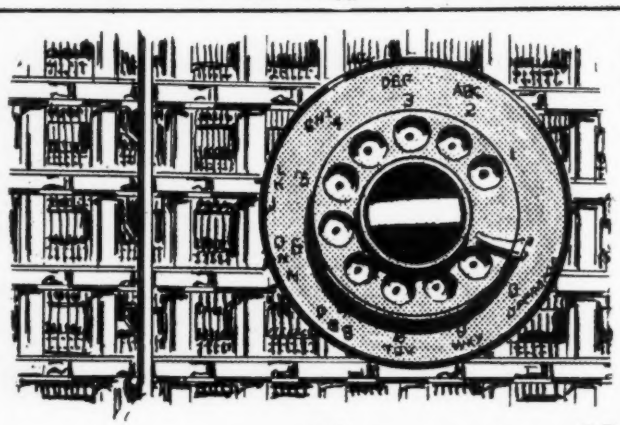
FACTS ABOUT Exide®
MANCHEX® TELEPHONE BATTERIES



TEN DAYS UNDER WATER... EQUIPMENT AND EXIDES DEFIED THE FLOOD!

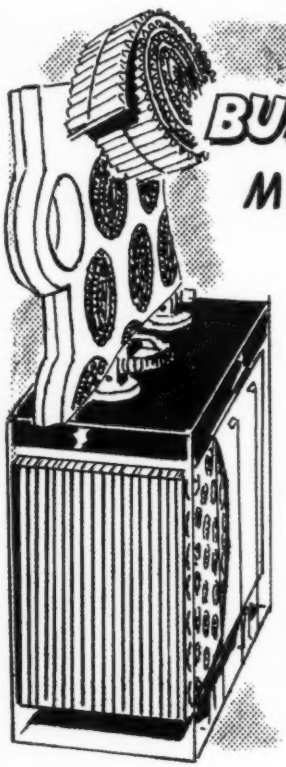
IN 1952 THE CORNING DIAL EXCHANGE OF THE UNITED TELEPHONE COMPANY GOT IN THE PATH OF THE RAMPAGING MISSOURI. PUMPS FAILED—ALL EQUIPMENT WAS FLOODED FOR TEN DAYS! WHEN THE WATER RECEDED, THE 48-CELL EXIDE WAS CLEANED, CHARGED AND PUT BACK IN SERVICE—TO GUARANTEE POSITIVE OPERATION OF VITAL EQUIPMENT—TO FURNISH ADEQUATE RESERVE POWER! DURING AND AFTER EMERGENCIES, RUGGED DEPENDABLE EXIDES PROVE THAT THEY ARE ALWAYS YOUR BEST BATTERY BUY—

FOR ALL TELEPHONE SERVICES!



DIAL SYSTEMS "THINK" AND EXIDES HELP THEM DO IT!

AUTOMATIC SWITCHING DEMANDS A STANDBY SOURCE OF POWER TO INSURE SERVICE CONTINUITY. TO SUPPLY INSTANT, AMPLE POWER, EXIDE MAKES A COMPLETE LINE OF TELEPHONE BATTERIES—IN BOTH GLASS AND PLASTIC. BACK OF EACH EXIDE STANDS YEARS OF CONSTRUCTION SKILL AND ENGINEERING RESEARCH!



BUTTONS OF LEAD MEAN LESS COST FOR YOU

THE IMPROVED PLANTÉ TYPE POSITIVE PLATES OF THE EXIDE-MANCHEX BATTERY ARE OF THE MANCHESTER DESIGN—AN EXCLUSIVE EXIDE FEATURE. BUTTONS OF LEAD DELIVER THE POWER YOU NEED, WHEN YOU NEED IT. OVER A HALF CENTURY OF DEPENDABLE PERFORMANCE IN TELEPHONE BATTERY SERVICE HAS DEMONSTRATED THAT EXIDE BATTERIES WITH THEIR BUTTONS OF POWER ARE YOUR BEST POWER BUY—

AT ANY PRICE!

LET EXIDE HELP SOLVE YOUR TELEPHONE BATTERY PROBLEMS. ❶ CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS. ❷ WRITE FOR FORM 4993, A TELEPHONE BATTERY ENGINEERING AND MAINTENANCE MANUAL.

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

A Selected List of Telephone Books

• ***CABLE—Modern Methods of Fault Location, Installation and Splicing.*** **Published by Telephony Publishing Corp.**

80 pages—8½ in. x 11 ins. The only cable book on the market. Prices: One to 5 copies, $1.75 each; 6 to 25 copies, $1.60 each; 26 to 50 copies, $1.45 each: over 50 copies, each.....$1.30

Reprint of 19 installments of article entitled "Cable Splicing," by Daniel Seitz, published in TELEPHONY. It is the only cable book on the market. Covers (1) the history of the development of cable; (2) composition and manufacture of cable: (3) modern methods of installing aerial, underground and building cable; (4) techniques and detailed instructions for splicing cable; (5) methods of locating and clearing cable faults; (6) instructions for pressure testing of cable.

• ***How to Build and Repair a Farm Telephone Line,*** **published by Telephony Publishing Corp.**

Eight-page booklet, unbound, 25 cents per copy to non-subscribers of TELEPHONY; special prices available to subscribers and to anyone ordering 25 or more booklets. This booklet, well-illustrated with photographs and diagrams, tells what was done to place a run-down farm line in good condition to furnish excellent service. The text describes how to attach wire to an insulator, how to attach brackets, how to set a pole, how to string wire, how to make a splice, how to protect telephone line from power line hum, how tree branches touching wires hamper transmission, how to connect drop wire to line wire, how to attach drop wire to house, how to connect house line to telephone, and how to connect the ground rod. The materials needed for a farm line are also listed.

• ***Rural Telephone Trouble,*** **published by Telephony Publishing Corp.**

Four-page reprint of an article published in TELEPHONY giving 33 magneto telephone and line troubles most commonly encountered, with suggestions as to the most likely cause of each —whether in the telephone set, the protector, the line, or the central office. Cost is 25 cents per copy to non-subscribers of TELEPHONY; special prices available to subscribers and to anyone ordering 25 or more reprints.

• ***ABC of the Telephone,*** **published by Telephony Publishing Corp.**

Vol. I. 84 pages—8½ ins. x 11 ins. Prices: One copy, $1.50; two to 25 copies, $1.35 each; 26 to 50 copies, $1.20 each; 50 or more copies, each.....$1.05

Reprint of first 21 installments of article by Frank E. Lee running currently in TELEPHONY. Covers fundamental information concerning electrical circuits, telephone transmitters and receivers, induction coils, generators, ringers, relays, line protection, dials, automatic switching, drop wire installation. Particularly beneficial to beginners.

Vol. II. 78 pages. Prices same as for Vol. I.

Covers sub-station protector installation, station wire installation, subscriber station installation, fault locating, relay circuits, planned maintenance program, electronic testing of cable and drop wire, crosstalk and transmission developments, attenuation and loading coil theory.

• ***Handbook for Telephone Managers and Engineers*** **— (In Two Volumes). Published by Automatic Electric Co., 1033 W. Van Buren St., Chicago, Ill. (illustrated)**

Vol. II (732 pages).....$3.00

Deals with telephone transmission data; subscribers' instruments; central office equipment; testing equipment and methods; protection, inductive interference, crosstalk; voice frequency repeaters; carrier telephone and telegraph systems; toll systems and radio-telephone systems.

• ***Telephone Handbook of Standard Outside Plant Construction Methods—Book No. 1.*** **Published by Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago, Ill. 365 pages (illustrated).....$3.50**

Covers standard outside plant construction practices, pertaining to pole line and long span construction. Seven sections are subdivided into more than 100 parts. Subjects are cross-indexed.

• ***Fundamentals of Telephony,*** **by Arthur L. Albert (1943) 366 pages $6.00**

This elementary book, intended for beginning students and for telephone workers, is devoted exclusively to telephone communication. The first four chapters present briefly the principles of electricity and acoustics upon which telephone practices are based. The book then considers the following subjects: Telephone transmitters, receivers, telephone sets and circuits, telephone lines, manual telephone systems, dial telephone systems, loading, telephone measurements, noise and cross-talk, and repeaters and carriers.

• ***Electrical Fundamentals of Communication, by Arthur*** **L. Albert (1952); 554 pages.....$7.00**

This book deals with fundamentals of electricity as applied to communication, including telegraphy, telephony, and radio. Contains basic electric circuits and phenomena using illustrations, terminology and problems from communication industry standpoint. Contains tables and 359 excellent drawings; is non-mathematical and clearly written for communication people having little or no college training. Especially suited for use in telephone training courses for new employes. Also valuable for employes who wish to extend their knowledge of electricity. A summary as well as review questions and problems given at end of each chapter.

• ***An Introduction to Carrier Current Communications, by*** **J. H. Petrie and H. E. Clapham; 136 pages.....$3.00**

Provides a clear understanding of the basic principles underlying carrier telephony and telegraphy. Couched in everyday language, the subject matter will be readily understood by anyone having elementary electrical training, or experience in electrical communications.

• ***Electrical Communications,*** **by Arthur L. Albert (1950); 581 pages (third edition).....$6.50**

Presentation of electrical theory of communication, including vacuum tubes, networks, filters, and discussion of entire industry. Various subjects considered as related to one another in modern communication systems. Designed as a college textbook and reference book for those having technical training. Others will find much of value in it, as use of mathematics has been limited but not at a sacrifice of engineering exactness.

• ***Automatic Telephone Practice,*** **by Harry E. Hershey (1954); 416 pages (seventh edition).....$10.50**

Generously illustrated, well-organized, this book is a complete reference work covering Strowger equipment. Five sections are devoted to automatic equipment: (1) Detailed explanation of equipment without reference to circuits; (2) historical background of systems; (3) fundamental elements appearing in all telephone and non-telephone circuits; (4) detailed study of typical modern circuits with each circuit analyzed contact by contact; (5) standard adjustments covering switches and relays; (6) certain procedural steps involved in engineering, manufacturing and installation of a typical Strowger office; (7) mechanics of termination, distributing frames, terminal assemblies, etc.; (8) relay design; (9) use of telephone type relays and switches in the industrial control field.

• ***Transmission Circuits for Telephonic Communication,*** **by K. S. Johnson (1925); 334 pages.....$6.00**

Author is Member of Technical Staff, Bell Telephone Laboratories. A treatise on the general theory and principles which are applicable to the development and design of circuits and lines for association with such telephonic instruments as transformers, receivers and vacuum tubes.

• ***Inductive Coordination of Electric Power and Communication Circuits,*** **by Laurence Jay Corbett (1936); 161 pages $1.75**

This excellent book discusses the nature of power transmission and of communication transmission, the effect of magnetic and electric induction and various influence factors. Susceptiveness and coupling factors, effects of conductor arrangements, transpositions in power and communication circuits and their coordination, power system wave shape, control of residual voltages and currents and many other phases are discussed. This book should contribute to a fuller understanding by power and communication engineers of each other's problems.

TELEPHONY PUBLISHING CORP.

608 So. Dearborn St. **Telephone: WA bash 2-2435** **Chicago 5, Ill.**

XUM

FLASHES AND PLUGS

"THEIR FINEST HOUR." Members of the Irvington, Neb., volunteer fire department were comfortably settled in their chairs after a banquet in their honor.

The Governor was about to present a plaque for "meritorious service" when the firemen leaped from their chairs and made a hasty exit—to answer a fire call.

• • •

2-11, PDQ. The father, who was in an upstairs bedroom, was alone in the house with his five-year-old son who was playing on the first floor. The parent was aghast to hear the boy say:

"Yes, operator, I want to report a fire at 104 Sunset, and tell them to hurry up."

The father gave a yell and racing down the stairs found his youngster placing another call—on his toy telephone.

• • •

MORE ON WORM-FINDERS. V. A. Diggs, general engineering supervisor, Ohio Bell Telephone Co., on Apr. 14 sent the following letter to Ralph E. Mooney, historical librarian, American Telephone & Telegraph Co. Mr. Diggs wrote:

"I just read in the Feb. 5 issue of TELEPHONY, page 10, your story about obtaining fishing worms with the hand-cranked telephone magneto. I tried this about 47 years ago and found that it works, but it takes two people to do it.

"One person cannot crank the magneto and then go to the area between the two grounded terminals, which should be placed about 20 feet apart, and pick up the worms. As soon as you stop cranking, they drop back into the ground.

"It is much easier to use the regular 110-volt electric light power, placing a 100-watt lamp in series with the circuit. During dry weather in the summer this method does not work very well unless you wet the ground thoroughly between the two grounded terminals.

"The worms come straight up out of the ground with about two-thirds of their length on top of the ground. It is necessary to take hold of them and pull the rest of each worm out of the ground. I have done this several times and it really works.

"I know this is a far cry from the telephone business, but since TELEPHONY gave the subject space I thought I would like to add my two cents worth."

(TELEPHONY felt that this subject deserved the space given it in "Flashes and Plugs," because there are so many in the telephone industry whose hobby is fishing.)

• • •

MYSTERY OF THE SOUND WAVES. The Jersey City Journal reports that the fellow in the second house from the corner says he wouldn't mind having a wiretap on his telephone, if only to find out what happens at the other end during those long conversations when his teen-age daughter merely says, "Hmmm" every 15 minutes.

CIRCULATION

Guaranteed circulation of this issue is 10,437, of which 9,912 is paid.

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April 23, 1955

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608 S. Dearborn St., Chicago (5), Ill., U. S. A.
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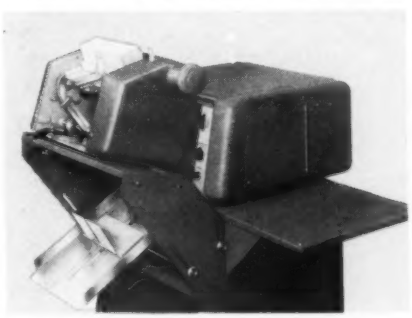
Visible totals speed toll billing with new 10% tax Here's the moderately priced, 100% electric, *Accounting Machine for Simplified Toll Billing.* Features a special register that computes the total toll charge *and* the total tax for each bill. The new Low-Cost Bookkeeping Machine will also be on display.

Unique method improves customer collections With *Kolect-A-Matic,* one clerk—at one desk—handles all accounting for 3,000 accounts. Signals show status of *all* accounts at a glance—slow payers stand out. *Safe-Desk* provides point-of-use fire protection for your source of revenue.



Microfilm economies in time and filing space Users testify that microfilming toll tickets saves enough to pay for the equipment in a year . . . boosts customer relations as well. Several models to choose from, including the new *Model 8 Film-a-record:* a low-cost 16mm machine that handles 18,000 tickets per hour.

Just out! *Newly Revised Manual on Simplified Revenue Accounting*

The "best seller" at last year's convention has been improved to give you even more effective ways to lick costs. Now . . . even better solutions to toll billing problems of all sorts. Now...new machine procedures and new forms for handling the new tax rate. You'll find them all in your free copy of the *revised edition* of *The Simplified Revenue Accounting Plan.*

See these profit-boosters at your near-by Remington Rand office—or write for descriptive booklets.

NEW EDITION gives you 40 solid pages of cost-cutting ideas...over 25 pictures and forms . . . shows several improvements in the first *complete* accounting system to be developed for the independent telephone companies. Pick it up at the Convention or mail in the coupon. No obligation.

Four vital ways you profit

The booklet describes in detail an integrated plan that offers rapid, economical accounting at a price that any independent can afford. Fresh ideas have been combined with tested techniques to give you: 1) up-to-date records of revenues due; 2) quick and economical collection of revenue; 3) simplification of paperwork with no deviation from accepted practices; 4) fire protection for vital source documents at point-of-use.

The plan is flexible, providing alternatives to fit in with your special needs. It can be adopted a step at a time without disturbing your operation. See its many profitable and ingenious features at our nearest office. You'll see lots of other Remington Rand products that are worth the trip alone, such as the latest type Sectional Customer Service Counters.

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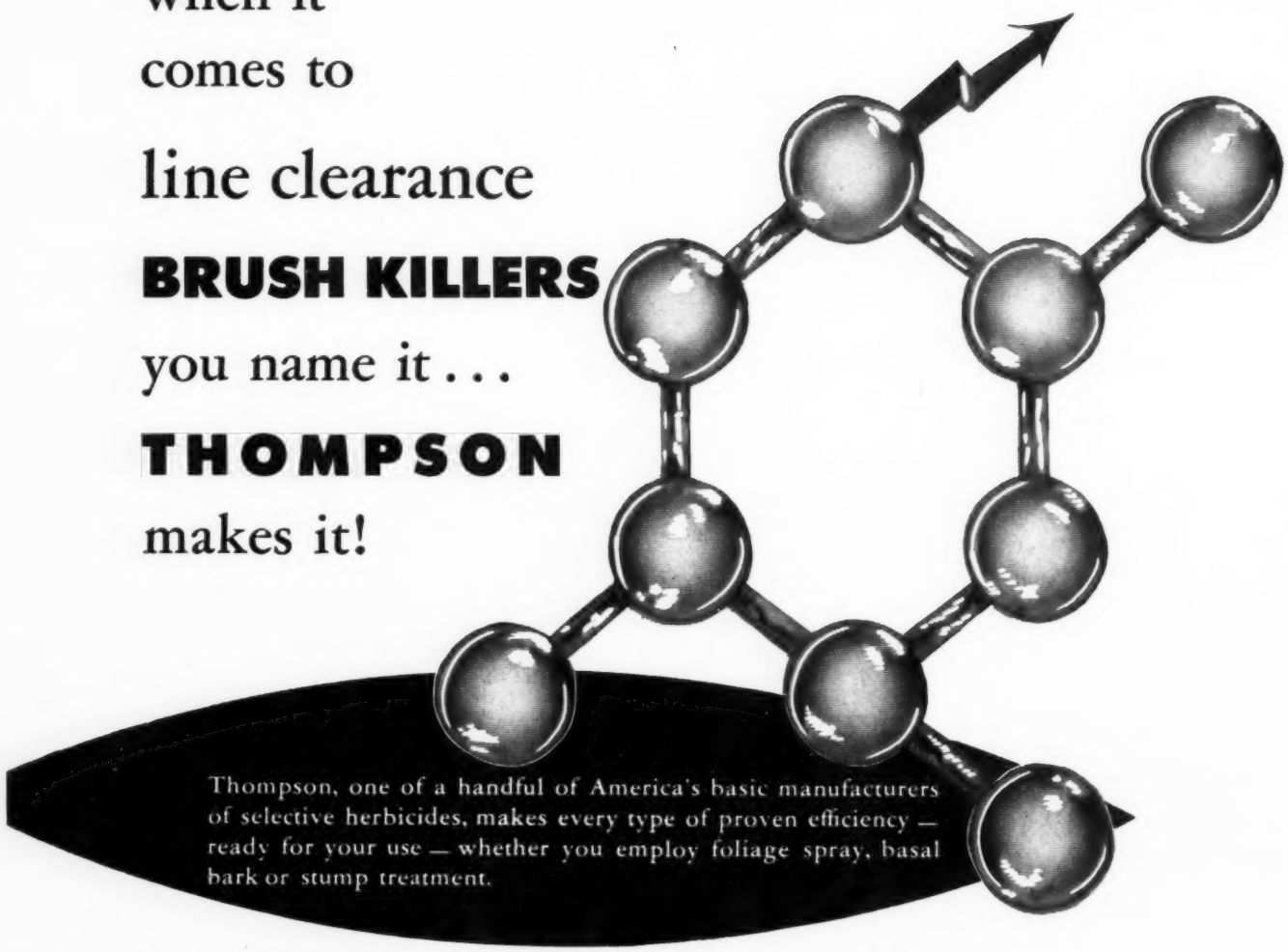

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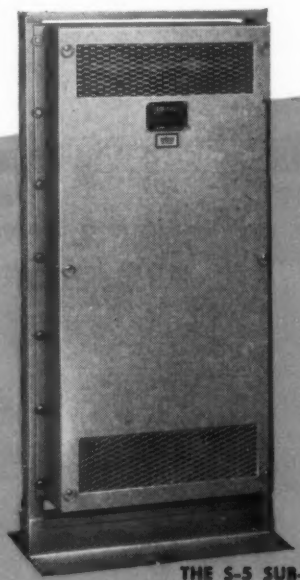

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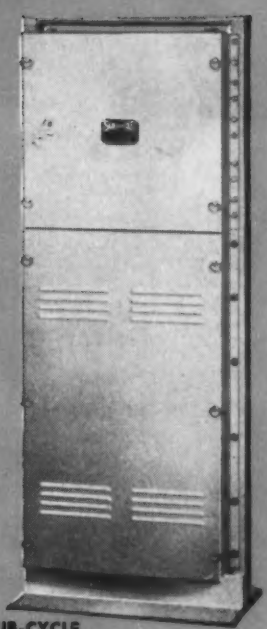

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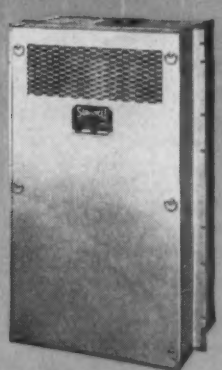

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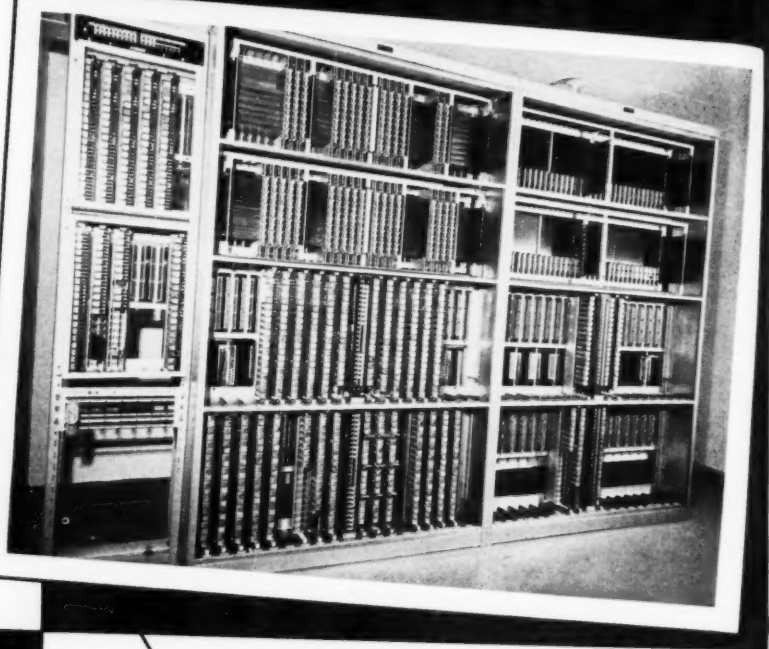

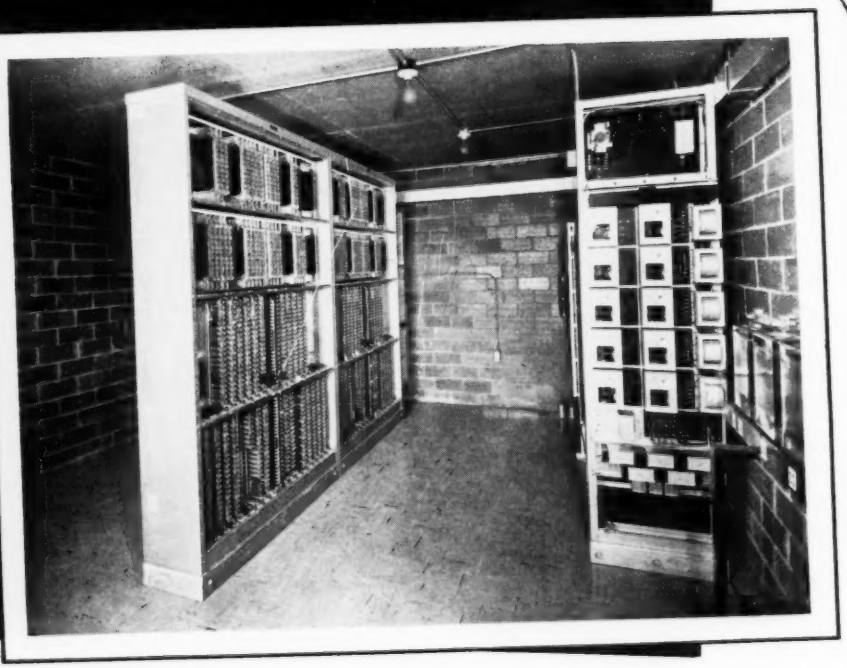

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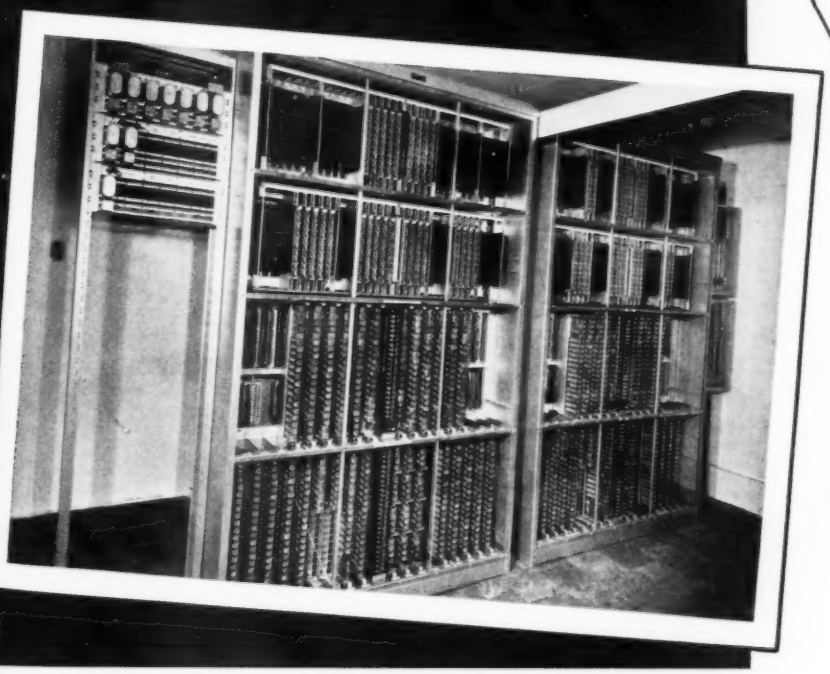

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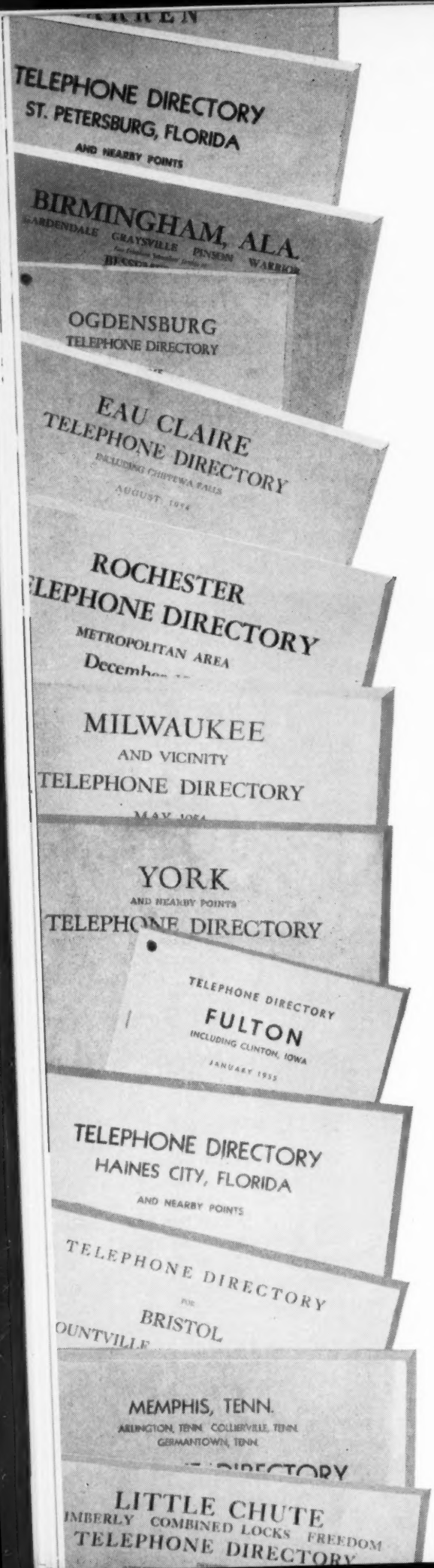

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Rural Telephone Growth Forecasting

By E. C. TURNER*

THIS ARTICLE is to outline some suggestions regarding the forecasting of telephone growth in the rural area portion of telephone exchanges together with some further suggestions covering changes in base rate area boundaries, which changes may be desirable as a result of these forecasts. While certain terms, used frequently herein, are familiar to most, it may be well to define them.

A telephone exchange area may include:

(A) In the Larger Towns or Cities	*(B) In the Smaller Towns or Villages*
(1) One or more central office districts	Generally one central office district.
(2) A base rate area or areas	May or may not have a base rate area.
(3) A locality rate area or areas	If a base rate area does exist same as (A).
(4) A rural area or areas, not necessarily, of course but often	If there is a base rate area, same as (A). If not, a distribution of all classes of service throughout the central office district.

Telephone rate areas are established to provide satisfactory grades of service and promote development in these services consistent with the degree of density and distance, in general, from the central office and calling interests of the existing and future subscribers within these areas.

The above listed terms may be defined as follows:

(2) The base rate area or areas include the more densely developed portion or portions of the exchange area, the larger base rate area usually surrounding the central office. Individual and party service with uniform rates as provided in a base rate area but no rural service is available.

(3) A locality rate area (or areas) is located outside of the base rate area and applied to a more or less isolated collection of small business and residence establishments and provided with uniform urban services within the locality area. The rates within this area will, however, be somewhat higher than in the base rate area.

(4) The rural area may be considered as two portions of the exchange area outside of the base rate or locality rate areas as follows:

(a) Rural non-farm portion—the

*Mr. Turner retired from the New York Telephone Co. in 1949, following 39 years in the engineering department, during which he participated in all phases of plant work. At the time of his retirement, he was supervisor in plant extension engineering. After he left the New York Telephone Co. he became associated with the Hawaiian Telephone Co. as plant extension engineer.

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portion adjacent to the base rate area or areas and having a population consisting partly of an overflow from the base rate area.

(b) Rural farm portion—generally beyond (a) having a population engaged largely in agriculture. Any telephone service other than rural in either (a) or (b) will be on a mileage basis measured from the base rate area.

In an article in the June 12 and 19, 1954 issues of TELEPHONY, some suggestions were given regarding telephone growth forecasting applicable to towns and cities or to the respective exchanges serving them. There were four basic factors involved in this forecasting as follows:

(1) Growth in population.
(2) People per household.
(3) Main stations per 100 households,
(4) Ratio of main stations to subscriber lines.

Growth forecasting, as outlined in the above mentioned article, would generally cover an entire exchange, its purpose being for the economic planning of central office buildings and equipment, and as a guide to or check upon the total of outside plant growth forecasts made individually as required for various portions of the given exchange. Any rural areas involved would be included and on a population basis, the latter being approximated from census enumeration districts and, while these rural forecasts would not, in general, be as accurate as would those obtained by methods outlined below, they would, in terms of subscriber lines, be a small portion of the total exchange line forecast and would certainly suffice for the above purposes.

This article will outline suggestions for rural area growth forecasting based on a survey in detail of the entire area in question. Now this suggested switch in the method of growth forecasting for city exchanges, including any rural areas therein, on the one hand, and for rural areas and even small villages, on the other hand, is because of the following basic conditions:

City Exchanges. The urban population is generally of sufficient magnitude as to become a substantial basis for growth forecasting and the nature of the business and residence development is well established. The future rate of population increase would, in the general nature of this factor, be somewhat lower than that of the past unless analyses of location, future business conditions, etc., indicated otherwise. In such forecasts, a field survey would be time consuming in itself and the total results obtained thereby would have to be in line with an over-all population base forecast.

Rural Areas — Small Exchanges. A relatively small population is spread

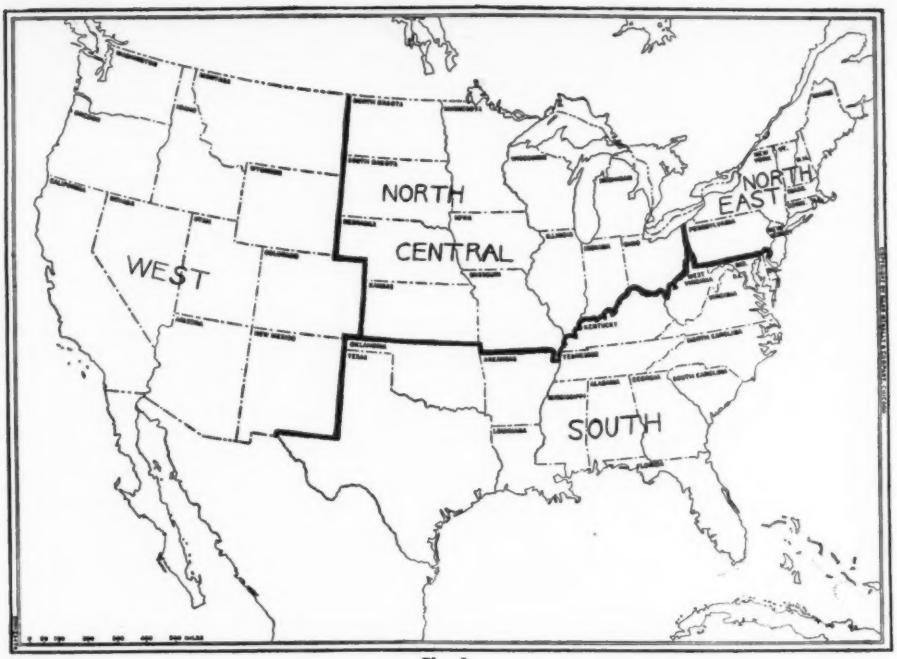


Fig. 1

over large areas. As indicated in the following population data, rural farm areas are losing population; rural nonfarm areas are subject to wide population changes as urban area population spreads out. The present population, even if it could be fairly closely approximated by the split up of Census Tracts, would provide a rather hazardous forecasting base. A field survey in this case, while necessarily covering relatively large areas, also involves covering comparatively few establishments. It provides an on the spot opportunity for evaluating the present status, telephonically of each establishment and any local conditions pointing toward new developments. While a field survey cannot, of course, anticipate seemingly sudden invasions of rural areas by industrial and residence development, it will certainly provide substantial data for a growth forecast with fairly normal future conditions.

Regardless of the method of approach in telephone growth forecasting, there is probably always an urge to obtain even an approximate indication of the relation between population and telephone development, either urban or rural as the case may be. Country wide, there are probably many variations between rural areas as applied to population and to telephone development. In view of these variations and with two country-wide private telephone groups and one government financed group, together with the fact that many rural areas have no telephone service, any statistical data given for any one of these groups covering the relation between rural population and rural telephone development could well invite various misinterpretations.

It is felt, however, that there will still be some instructive points in citing some country-wide population data that refer particularly to rural areas. It is general knowledge, of course, that industry has been moving from New England to the southern sections of the country. This movement and its demands on telephone service was outlined in the article "The South Meets Great Expansion" in the Aug. 28, 1954, issue of TELEPHONY. The movement of industry from urban and suburban to rural areas is more or less country wide and the following brief outline of rural population changes not only indicates the actual magnitude of these changes, but appears to emphasize two other factors which may be generally involved in connection with forecasting rural growth. These factors are as follows:

(1) While the country-wide overflow across rural-base rate boundaries of urban and suburban development, both industrial and residential, affects largely the rural non-farm areas, there is also in this the elimination of some rural farm areas. This latter, together with the movement of some large industrial plants into the strictly farm areas, must certainly be reducing the present available farm areas. Unless improved methods of agriculture, more irrigation, higher land tillage in mountainous sections, etc., become available, any appreciable increase in purely farm population appears questionable.

(2) This above population overflow also appears to raise a question as to the need, in many cases, for base rate area boundary changes. This question has a particular bearing on the map codes to be used in the rural area field surveys. It is felt that the map code suggested later for existing and future developments will indicate fairly clearly if the base rate boundary should be changed and if so, to what extent.

Now as to the census population data and first as to the areas considered urban and rural by the 1950 census report, the following is quoted

from this report: "According to the new definition that was adopted for use in the 1950 census, the urban population comprises all persons living in:

(1) Places of 2,500 inhabitants or more incorporated as cities, boroughs and villages.

(2) Unincorporated towns of 2,500 inhabitants or more.

(3) The densely settled urban fringe including both incorporated and unincorporated areas around cities of 50,000 or more.

(4) Unincorporated places of 2,500 inhabitants or more outside any urban fringe.

The remaining classification is rural.

Quoting further from census report as to the portion of the rural population that is farm:

"The farm population for 1950 includes all persons living on farms as determined by the question, 'Is this house on a farm (or ranch)?' Farm residence is therefore determined without regard to occupation. The classification depends upon the resident's conception of what is meant by the word 'farm.' The population living on farms has never, of course, been identified with the population dependent upon agriculture; but there is some evidence that the persons dependent upon agriculture have been decreasing more rapidly than the total number of farm residents."

The 1950 census, in showing the changes in population during the 1940-50 decade, divides the United States into four sections as shown in *Fig. 1.*

These changes are indicated numerically in *Table I.* (The 1940 census definition of rural areas is used for comparative purposes; the 1950 rural areas, by definition, being 5 to 10 per cent lower than the 1940).

While there are, no doubt, varying discrepancies between census and telephone service rural areas, nevertheless, certain over-all conclusions regarding rural population changes may be derived from the above data. During the 1940-50 decade, the rural population of the farm areas throughout the country was reduced at a fairly uniform rate of around 25 per cent (or an average of 2½ per cent per year) and this rate of reduction may well have increased during the subsequent years.

In actual population this reduction was most pronounced in the "South" section with the "North Central" next in line. It appears obvious that in the "South" section, where the population gain in the non-farm rural area approximates the loss in the farm area, the population switch was due to industrial development moving in from the North and to the leaving of farms for other industrial employment.

This condition applies, no doubt, to all sections of the country, but in a lesser manner. The effect of the above population changes, in location and amount, on rural growth forecasting will be further considered in connection with the various detail steps.

The suggested details for carrying out rural area growth forecasting will be considered under three phases as follows:

Section (A) Methods of carrying out rural area field surveys for the outside plant relief period of say five years or so.

Section (B) An approximate appraisal of the added effect on the normal rural area growth of the injection of civil and military industries in these areas.

Section (C) Base rate area boundary changes which may be desirable in view of past and indicated future building developments beyond these present boundaries.

Section (A)

(1) *Survey Personnel.* It appears desirable to have two people working together in a car, a local commercial representative and a district plant engineer. The combined local experience of these two telephone people should be such as to enable them to directly appraise and record on the field maps the information that will be outlined below.

(2) *Area to be Covered.* This area will depend upon which of three relief projects are in mind. Relief may be planned for only one or two pole line routes or for the entire rural area in the exchange. In any case, the survey will cover one pole line route at a time, each route being given a particular designation.

In some cases, it may be found that a survey of one or two pole line routes, typical of the remaining routes in the exchange, will be sufficient to provide a satisfactory appraisal for the entire exchange. Again, in the case where it is planned to shortly convert a small manual office to automatic, a field survey of the entire exchange may be fully justified.

In many cases, the development that justified the location of the existing office has deteriorated considerably, while new developments are under way in this exchange at some distance from the present office. A field survey of such an exchange would provide a dependable base for locating the near future wire center.

(3) *Appraisals to be Made and Recorded on the Field Map.* The basic requirement of a field survey made to determine future telephone needs is the recording of *all* data which will lend itself to a forecast of these needs.

Table I

Section of U.S.*	*Total Pop. of U.S. (000 omitted)*			*Total Rural Pop. (000 omitted)*			*Total Rural Non-Farm (000 omitted)*			*Total Rural Farm (omitted)*		
	1940	1950	Increase Total	%	1940	1950	Increase Total	%	1940	1950	Total	%
North East	36,000	39,500	3,500	9.7	8,400	9,900	1,500	17.9	6,100	8,100	2,000	32.8	2,300	1,800	—500	—21.7
North Cent.	40,100	44,500	4,400	11.0	16,700	17,500	800	4.8	7,500	10,000	2,500	33.3	9,200	7,500	—1,700	—18.5
South	41,700	47,200	5,500	13.2	26,400	26,400*	—	—	10,900	14,500	4,500	45.0	16,400	11,900	—4,500	—27.4
West	13,900	19,600	5,700	41.0	5,700	8,000	2,300	40.3	3,400	6,100	2,700	79.3	2,300	1,900	—400	—17.4
Total	131,700	150,800	19,100	14.5	57,200	61,800	4,600	8.0	27,900	38,700	11,700	43.3	30,200	23,100	—7,100	—23.5

*See Fig. 1

*Actual decade gain of 46.6 thousand

Total Urban	74,500	89,000	14,500	19.5

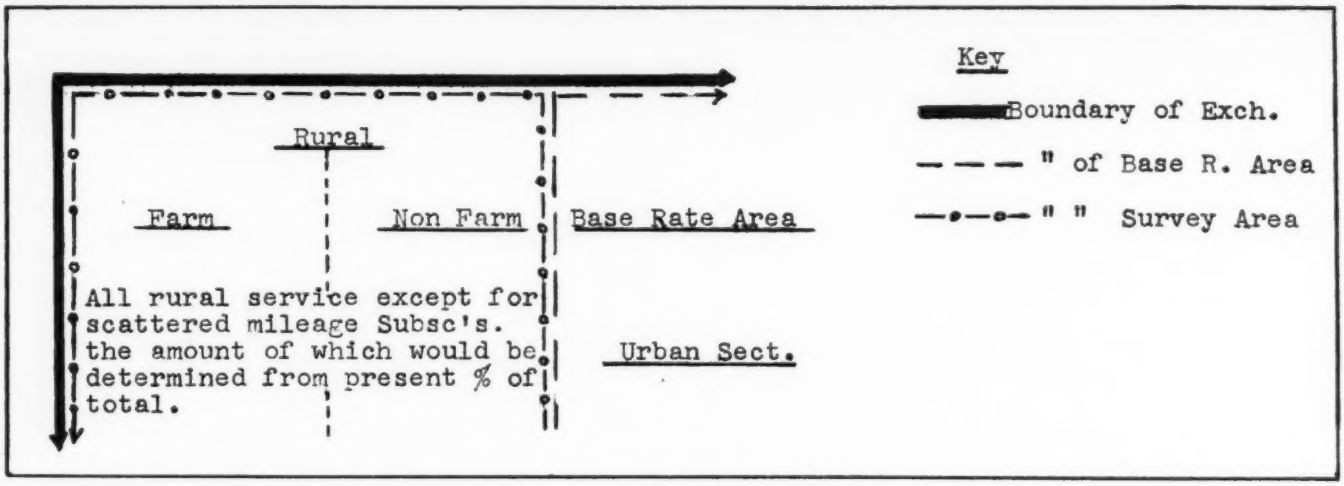

Key
Boundary of Exch.
" of Base R. Area
" " Survey Area
Rural
Farm
Non Farm
Base Rate Area
All rural service except for scattered mileage Subsc's. the amount of which would be determined from present % of total.
Urban Sect.

Fig. 2

This appraisal should be entirely free of any thought as to the methods by which these telephone requirements can be met or whether they can be met at all. These latter are management considerations. The following data should be recorded for the pole line being surveyed:

(a) The location of all existing establishments, business and residence, with those having telephone service being so indicated.

(b) Character of all existing establishments, i.e., first, second or third class, with reference to the telephone service that they should have, based on appearance, general surroundings, etc.

(c) Location and above character of all additional establishments under construction together with the forseeable location and character of near future establishments based on surroundings, etc., that justified the present construction.

Experience has shown that all local information pertinent to future growth, or regrade, the latter being included in the above characterization, should be recorded on the spot as any helpful local features not so recorded will fail to be recalled later in the office. It is suggested that in these surveys, some consideration be given to fairly country-wide conditions as follows:

Rural Non-Farm Areas. As indicated above, on a country-wide basis, the population in these areas during the 1940-50 decade increased over 40 per cent and during the last four years this rate of increase has probably been exceeded. The point that it is desired to emphasize in these surveys is: In many cases where base rate areas either exist or are to be established in a given exchange, portions of these present rural non-farm areas should be included and these surveys should, therefore, provide carefully appraised conditions in these changing areas.

(Please turn to page 78)

		BUSINESS			RESIDENCE		
Class of Establishment	Color of Crayon	Existing Establish'ts Telephone Service Yes	No	New Establishments as Appraised	Existing Establish'ts Telephone Service Yes	No	New Establishments as Appraised
1st Class	Red	☒	☐	⋮	☒	☐	×
2nd Class	Yellow	☒	☐	⋮	☒	☐	×
3rd Class	Green	☒	☐	⋮	☒	☐	×
Rural	Blue	☒	☐	⋮	☒	☐	×
Pub. Tel.	Black	☒		⋮			
No. Service	Brown	☒			☒		

Table II

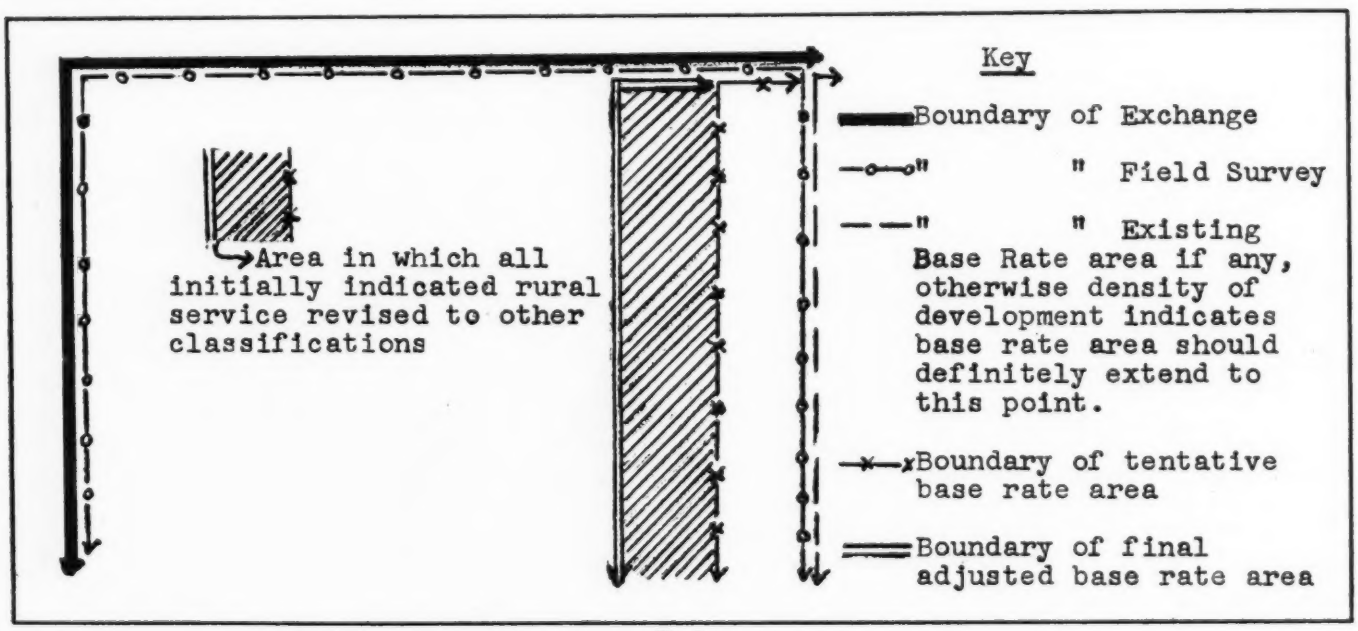
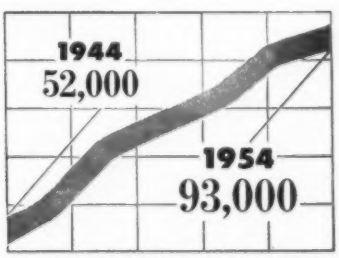

Key
Boundary of Exchange
" " Field Survey
" " Existing Base Rate area if any, otherwise density of development indicates base rate area should definitely extend to this point.
Boundary of tentative base rate area
Boundary of final adjusted base rate area
Area in which all initially indicated rural service revised to other classifications

Fig. 3

He's writing his own ticket

. . . to a fast-moving future with the growing Independent Telephone Industry!



GROWTH IN NUMBER OF EMPLOYEES
of Independent Telephone Companies

That slip of paper he's holding—an ordinary service report—is actually this young man's ticket to the future! His ability will determine just how far it takes him. For there's an "up from the ranks" tradition in the telephone business . . . and an extra measure of opportunity on the growing Independent side. In an industry moving at the pace of America's 5,000 Independent Telephone Companies . . . he won't stand still for long!

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Telephone by Stromberg-Carlson

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

Pennsylvania Building • Washington, D. C.

This is the 13th United States Independent Telephone Association advertisement in its campaign to publicize the Independent telephone industry. The ad will appear in the May 2 issue of *Time* and the May 6 issue of *U. S. News & World Report.*

XUM

Tele-Ventures

Telephone Companies Are Playing an Increasingly Large Part in Providing Facilities for the Transmission of Television Programs. Here's How Two Gary Group Companies Are Doing Their Bit.*

ILLINOIS TELEPHONE LEADS STATE INDEPENDENTS IN TELE-VENTURES

ILLINOIS TELEPHONE Co. became the first Independent telephone company in Illinois to provide microwave facilities for a television station when Station WBLN at Bloomington began broadcasting live network television programs of the American Broadcasting Company in November, 1954.

Bloomington is the eleventh city in the state to have a station on the television network, and Station WBLN is the seventeenth station to broadcast live programs, made possible by Illinois Telephone Co.'s venture into the television field.

According to James F. Van de Vusse, president of Illinois Telephone, the telephone company brings programs to Bloomington over a 30-mile radio relay route from Groveland, Ill. At the 193 foot tower near Groveland, they are tapped off the Chicago-St. Louis radio relay route, which is jointly owned by the Long Lines Department of the American Telephone & Telegraph Co. and the Illinois Bell Telephone Co.

In order to tap this route, it was necessary for Illinois Telephone Co. to construct a microwave tower and a small equipment building on the Edward J. Hartzold farm near Danvers. This tower relays the television programs from the Groveland tower to receiving equipment installed by the telephone company at WBLN's station at the intersection of Routes 66 and 150, southeast of Bloomington, for broadcast to the vicinity.

Bell System's radio relay tower near Groveland, Ill., along the Chicago-St. Louis route. Illinois Telephone Co. has tapped this route by installing a reflector on this tower.

By the radio relay method of transmission, super high frequencies called microwaves are sent from relay station to relay station. Like light waves, they travel in a straight path, rather than follow the curvature of the earth. Four billion microwaves pass a given point every second. In their journeys through space, they lose strength and must be amplified at relay stations such as the one at Groveland.

These relay stations are designed for unattended automatic operation. A nearby telephone central office is informed immediately, however, if trouble occurs at an unattended station. Any one of a number of trouble conditions, ranging from the opening of the door to equipment failure, will sound an alarm. The emergency generator can be tested by remote control, and other operations necessary to keep the microwave signals moving can be performed from the telephone office.

Termination equipment installed by Citizens Independent for station WTHI-TV is checked by J. P. BERRY, equipment engineer, and W. LEONARD TICHENOR, switchman.

CITIZENS INDEPENDENT ASSISTS IN FIRST TV AT TERRE HAUTE, IND.

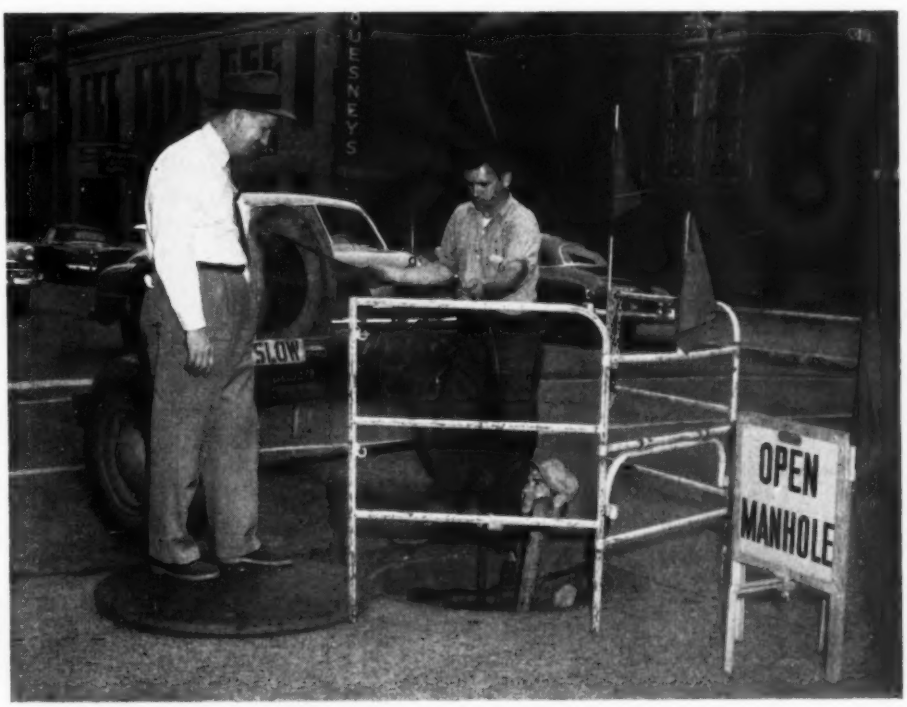
WTHI-TV, Terre Haute's first television station, went on the air the evening of July 22, 1954. WTHI operates on Channel 10 with maximum power and a transmitting antenna of 548 feet. Both studio and transmitter are located in downtown Terre Haute. The studio building also houses the AM-FM radio stations.

Citizens Independent Telephone Co. installed coaxial cable and terminating equipment of the latest design which provides for the transmission of color television. Additional facilities were also installed to provide local channels for the radio station.

The outside plant work was under the supervision of John C. McAtee, outside plant supervisor, and the equipment installation under the supervision of J. P. Berry, equipment engineer. The equipment was installed by W. Leonard Tichenor, switchman in the Terre Haute office.

Independent telephone companies are taking an increasingly active part in Tele-Ventures. Last year *Telephone Topics* reported on the participation of two Gary Group companies in TV: The Home Telephone & Telegraph Co. of Fort Wayne, Ind., and The Missouri Telephone Co. of Columbia, Mo.

*Reprinted from February, 1955, TELEPHONE TOPICS, employe publication of the Gary Group Operating Telephone Companies.



JOHN C. McATEE, outside plant supervisor, Citizens Independent; DAVID DRAGON, cable splicer helper, and EMMET WOODS, cable splicer (l to r), installing cable facilities for television station WTHI.

XUM

Management Looks At Regulation

By FRANCIS X. WELCH*
Telephony's Washington Editor

WHAT WOULD your answer be if I were to ask what, in your own individual opinion, was the invention or discovery of the past century which furnished the greatest single contribution to our modern living standards—our American way of life—if I may indulge in that old cliché?

Like most elementary questions, I am sure that would cause most of you to pause. During the past few years, we have celebrated the 75th anniversary of Bell's invention of the telephone, Edison's electric light, and the 100th anniversary of Morse's first telegraph. During the past half-century we have seen the advent of the automobile, airplane, radio, and television.

We have also witnessed amazing improvements in component factors which are back of the scenes, but without which these more spectacular inventions would have been difficult if not impossible to bring into widespread use. I refer to the great chemical and electronic discoveries and improvements in techniques and metallurgy, such as steel making, aluminum, magnesium, germanium, and so on.

And, without taking the time to poll this distinguished group as to what each one thinks has been the most important factor or contribution to our modern standard of living, let me hasten to suggest my own candidate and I will venture to guess that it is something you would not think of. It may be something that will get me plenty of argument. I do not know. I hope so, because only out of stimulated discussion and thought can managerial ideas about regulation progress. But without more qualifications, I would like to suggest that the most important improvement—in the sense of being the least dispensable of all contributions—has been the discovery of full and widespread use of the limited liability corporation. By that I mean the modern type of business corporation under which the great bulk of the dollar value of all business in this country is conducted.

That is by no means an original observation. I first came across that idea in the writings of the late William Meade Fletcher, former chairman of the Virginia Corporation Commission and one of our outstanding American authorities on corporation law. More recent writers, including such liberal economists as Adolf A. Berle Jr., David E. Lilienthal, John K. Galbraith of the Harvard faculty, have all shown a new respect for our American corporate form of Capitalism, not only for what it has done so far but for what it can be made to do for us in the future.

*Mr. Welch presented the address at the Executives Conference of the United States Independent Telephone Association, held Apr. 4 and 5 at Belleair, Fla.

Once Nation of Proprietors

But, let us dwell a moment on this basic idea of the indispensability of the corporation. Try and imagine, if you will, a major business attempting to operate today without the advantages of limited liability incorporation. The only other alternatives are proprietorship, partnerships, voluntary associations, or cooperatives, and direct government operation of business.

When this Republic of ours was first established we were a nation of proprietors. What business *was* conducted was carefully operated by small merchants and artisans. During the 19th century these proprietors began to join forces in the form of partnerships which gave us such well-remembered business names as Sears Roebuck, Wells Fargo, and many other original business partnerships, which have long become incorporated or disappeared. Of course, as you are all doubtless well aware, the business corporation had been available as an instrument for commerce long before that period. But the nature and volume of business, prior to the 19th century, were not such as to demand to such a large extent the business advantages which only the limited liability corporations can give.

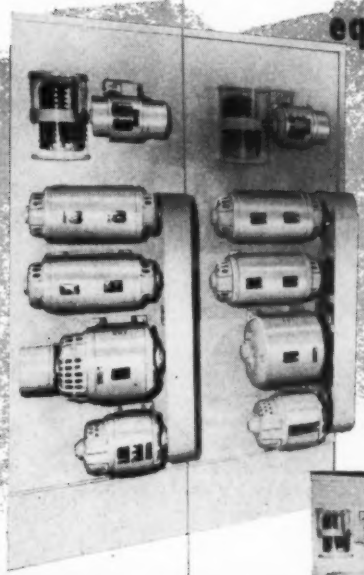
Now if we go back briefly over the history of corporate enterprise in the Western World, we find that whenever the corporate form of business got into trouble with the consuming public or investing public, or both, it has been because the business corporation had somehow gotten away from this basic idea of free competition and fair play and had become an instrument of monopoly and oppression.

In the beginning that was what the corporation was expressly designed for—to encourage business monopoly. The very first corporations, of which we have records, were started by the old Hanseatic League, a chain of North German cities around the Baltic Sea which did a flourishing international trade as early as the 11th and 12 centuries.

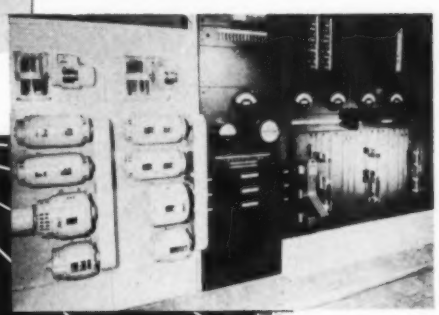
These earlier guild forms were based on membership in a particular craft or trade rather than stock ownership and their purpose was openly monopolistic, to channel all business possible to their members and keep it there, if possible. Later on, during the conquest of the New World, the crown chartered companies were created by the kings of England, France, Spain, Holland, and other countries to secure business monopolistic advantages for

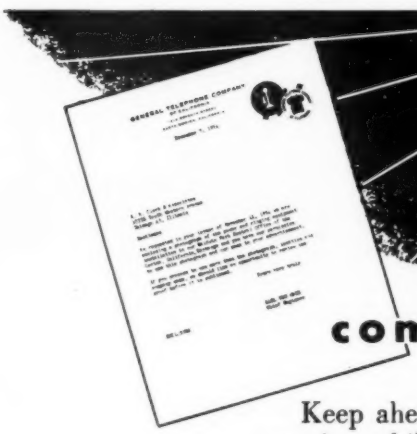
ESCO VERTICAL

ringing equipment . . .



a modern exchange





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EXCLUSIVE ESCO FEATURES — *space-saving vertical mounting*, completely pre-wired to fit into power line-ups. *Advanced Interrupter design*, for accurate and positive timing. *Improved Idler Drives*, with single-point adjustment that stays, for smoother operation, longer life — plus lubricated for life bearings throughout, quality construction of every component. All rotating parts dynamically balanced, and each assembly fully tested.

Factory built to your particular specifications, ESCO Vertical ringing equipment is available in standard or special power ratings and frequencies to meet your present and anticipated needs.

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XUM

a sovereign power to the exclusion of all other powers.

In this way, the private capital of the countries was mobilized to finance colonial development without necessarily risking the prestige or formal military commitments of those sovereign powers. And, so India was conquered for the British by the East India Co., chartered in 1600; Canada was developed by the Hudson Bay Co., chartered in 1670, and which is still doing business in a limited way. Many of our early American colonies were established under crown charters.

Became Law to Themselves

Why didn't these vehicles of trade continue to flourish? Because they had become monopolistic. They tended to become laws to themselves—raising their own armies and navies, even minting their own money, and generally suppressing any internal attempt at competition in trade.

A man could easily lose his life in those early times, to say nothing of his business, property, or personal liberty, if he violated what amounted to company-made legislation, by presuming to do business in competition with the crown chartered monopoly. It was these and related abuses which brought about our own American Revolution.

After that Revolution, the newly-established American states and the federal Congress reformed our corporation laws and gradually the American businessmen of the 19th century, management people as we would call them today, began to discover that the business corporation could actually be used to foster competition and fair trade instead of protecting monopoly.

It was these reforms which eventually resulted in our Sherman Act, Clayton Act, and other anti-trust laws, and in the establishment of the Federal Trade Commission.

And it was during this same period when the giant of American industry had stirred, and realized what a valuable instrument of business the corporation form was, that we also discovered the distinctions which had to be made in the field of public service enterprises.

It was recognized by utility management and eventually by the law, that area competition between two utility companies of the same kind simply would not work, that it resulted in wasteful duplication of facilities, and poorer service at higher prices. And so our American system of public utility regulation was born.

And, I think we will all agree that it has succeeded. Nowhere else in the world today will we find so much public utility service, nor such high-quality service, patronized by so many people, the masses of the people, as under our American system of public utility regulation.

RATE OF RETURN ON INVESTED CAPITAL

	Gas Industry	*Electric Industry*	*Telephone Industry*
1954	5.9%	6.1%	5.3%
1953	5.8%	5.9%	5.6%
1952	5.7%	6.0%	5.5%
1951	5.9%	5.9%	5.5%
1950	6.3%	6.4%	5.9%
1949	5.4%	6.5%	4.4%
1948	5.8%	6.5%	4.2%
1947	5.7%	7.0%	3.7%
1946	6.6%	7.5%	6.0%
1945	6.4%	7.7%	7.0%
10-Year Average	5.9%	6.5%	5.3%

Chart which Mr. Welch used to make a point in his address at the USITA Executives Conference, showing the trend of rate of return during the past 10 years on invested capital for the gas, electric and telephone industries.

Yet, it would be a mistake to consider our system of utility regulation something contrary to free competition, which acts as an automatic regulator of non-utility business. From the utility management's viewpoint (and I think our legal history supports this), our American system of regulation was conceived as a *substitute* for competition.

In other words, free competition between the same kind of utilities in the same area was recognized as impracticable. So what has developed in our present system of commission regulation, was simply an effort to compensate—in the case of utility operations—for the necessary withdrawal of the powerful and natural forces of free competition.

Utilities Have Competition

Now, I have dwelt somewhat upon this distinction of commission regulation of utilities (as a partial substitute rather than an incompatible alternative for free competition) to provide a background for some further observations about what seems to be shaping up in the relationship between management and commission regulation of public utilities.

Far from being in any way incompatible with the spirit of free competition, our system of commission regulation is actually supposed to preserve as much of an area of free competition in the various phases of utility operation as is consistent with public interest.

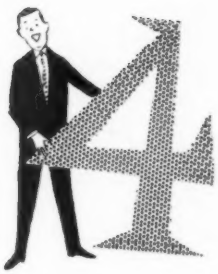
In other words, management knows that the modern telephone company is a protected monopoly, as it is so often called, with respect to only one small part of its operations—*the service area*. In every other respect, it is even *more* competitive than non-utility enterprise. The telephone company must compete with every other business, for example, in hiring employes and keeping them satisfied with appropriate wages and job responsibility. It must compete with every other business in the matter of raising new capital and building new plant at highly competitive construction prices. It must compete in the matters of buying supplies and equipment from manufacturers. It must bear the same tax loads. It is subject to the same Taft-Hartley, the same securities and exchange and other laws regulating business in general.

On top of all this, the telephone company is limited by the government as to how much money it can make, while its unregulated business company competitors—on all these items—are perfectly free to charge whatever the traffic will bear for their products.

All right, let us agree that telephone companies *are* competitive with respect to every phase of business operation (except the service area). What should be the attitude of management towards regulation? At first blush that seems an easy question because it can be so completely answered by another question: What would utilities do *without* commission regulation?

If there were no commission regulation do you think privately owned utilities would even be in business today as members of our private enterprise economy? Do you think for one moment that the American people would willingly allow public utility companies to operate as area monopolies without some form of regulation, especially as to rates?

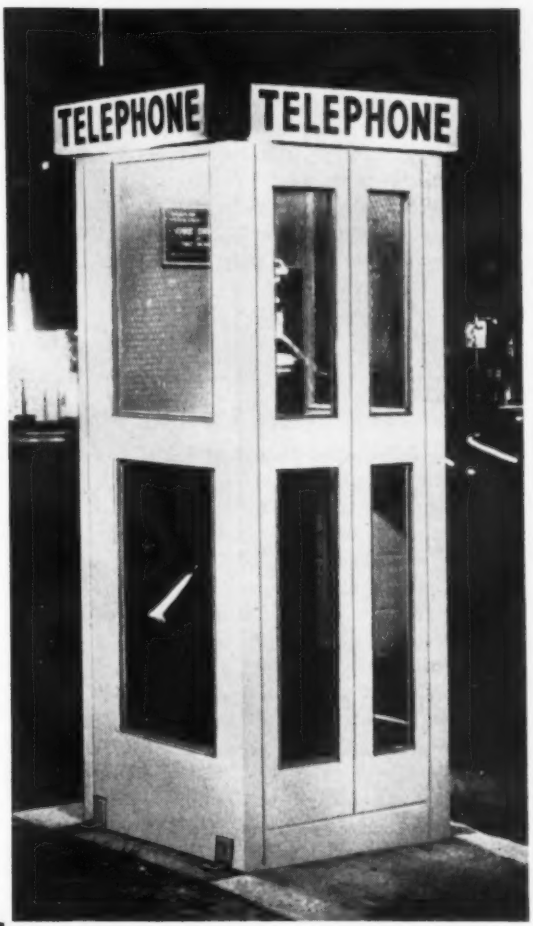
The obvious answers suggest that effective commission regulation is a re-



4 ways to tell a telephone with GEECO lighted signs

BETTER LOCATIONS, GREATER REVENUE

. . when you answer the question "Where's the phone?" with a colorful identifying sign that is an attractive addition to any installation.



1 PROTECTING IDENTITY FOR THE OUTDOOR BOOTH: COMBINATION LIGHT AND SIGN

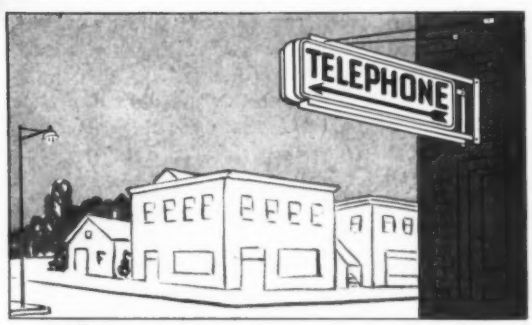
Provides a pool of light around the outdoor booth that makes the area more inviting . . . offers protection to your patrons . . . adequate light to use the directory and dial the instrument. Installed as required, depending on booth location.

2 FOR AN EXCLUSIVE LOCATION: THE "600" SERIES

Finishes available in plated Satin Copper or Brass or four colors of Hammered Baked enamel. Faces in one of seven different background colors with white lettering. Colored lamps in tinted or shaded effects. Easily installed. Direction arrows. A versatile and eye-catching sign.

3 DEMAND ATTENTION WITH COLOR: THE "500" SERIES

Dimensional directional sign blends beautifully with modern surroundings. Made of satin chrome finish and colored Plexiglas panels with raised letters in contrasting hues. Tints and shaded effects. Lighted with 15 watt' fluorescent lamp. Variety of color combinations and directional layouts.



4 POINT THE WAY TO A REMOTE LOCATION: THE T-240 SIGN:

A directional sign to point out an outdoor booth, or for use indoors where larger sign is desirable. Plexiglas face is lighted with slimline fluorescent lamps, and body of sign is of lifetime aluminum. Easily mounted.

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sponsibility of management. It is a responsibility which management must accept and fulfill in its own enlightened self-interest—because the only alternative would be to flirt with the very destruction of private enterprise in the utility industries.

Our central thesis therefore emerges as a simple proposition: How to make and keep government regulation of utilities effective. And when I say effective, I mean that in the broad sense—including fairness to all concerned—reasonable, efficient, and worthy of the confidence imposed in it. For if regulation were to lack any of these qualities, it could not be said to be truly effective.

From my own professional post of observation, which requires me to keep constant watch over the progress of utility regulation, it is my considered judgment that over-all, and by and large, our commission form of regulation is working successfully.

It has its problems and it has grave dangers and hazards.

It can and does fail to realize the goal of effectiveness here and there.

It could definitely fail to the point of breakdown, collapse, and abandonment in the future.

But, as of now, we have got to admit that it is doing a job. Whether it will continue to do a job is mainly what I want to talk about this morn-

(Please turn to page 79)

New REA Loans To Provide Service For 2,523 Rural Subscribers

The REA approved five loans for improving and extending telephone service in rural areas of Missouri, Kansas, Wisconsin, Minnesota and Oklahoma, the U. S. Department of Agriculture announced on Apr. 3. The loans amounted to $1,224,000 and will enable the borrowing companies to provide modern dial service to 2,523 farm families and other rural establishments.

Purdy (Mo.) Telephone Co., on Apr. 5 was given an allocation of $171,000 to finance inmprovement and expansion of rural telephone service in Barry County.

The borrower plans to convert its present magneto system, serving 149 subscribers, to dial operation, and provide facilities to serve 416 rural families in the operating area now without telephones.

The company will construct a new automatic central office at Purdy, rebuild 11 miles of the existing line and add 112 miles of new line. The rehabilitation and expansion will make it possible for the Purdy company to offer new and improved service to 565 subscribers in the service area.

Norman C. Gibbons is president and manager of the Purdy Telephone Co.

* * *

On Apr. 6, the Colwich Telephone Co., Inc., Bentley, Kan., received an allocation of $96,000 to improve and extend rural telephone service in Sedgwick county.

This company is presently furnishing magneto service to 109 subscribers over 41 miles of line.

The borrower proposes to use the loan funds for converting the system to dial operation and to add facilities to serve 130 rural families in the community now without telephones.

About 34 miles of the existing line will be rebuilt, 33 miles of new line added, and a new automatic central office building constructed at Colwich. The completed system will consist of 68 miles of line.

Mr. Herold Osburn is president and manager of the Colwich Telephone Co.

* * *

Also on Apr. 6, the Amberg Telephone & Telegraph Co., Wausaukee, Wis., was granted a loan of $143,000, second loan to this borrower.

These loan funds will be used to furnish modern dial service to 113 subscribers who were not included in the first loan. About 39 miles of new line and other facilities will be constructed to handle the additional subscribers.

The two REA loans, totaling $574,000, will make it possible for the Amberg company to serve a total of 1,344 subscribers over 385 miles of line in Marinette County. Automatic central offices will be located at Amberg, Goodman, Grivitz, Pembine and Wausaukee.

Robert H. Keating is president and manager of the Amberg Co.

East Otter Tail Telephone Co., Perham, Minn., on Apr. 7 was granted a loan of $476,000, third loan to this borrower.

The company plans to use these loan funds to serve 872 subscribers who were not included in previous loans.

The Henning-Otter Tail Telephone Co. at Otter Tail, and the Heinola Telephone Co. at New York Mills, now serving 528 subscribers over 158 miles of line, have been acquired by the borrower, and will be rehabilitated and integrated into the East Otter Tail system.

All of the acquired line will be rebuilt, 170 miles of new line added, and new automatic central offices constructed at Otter Tail and New York Mills. These changes will permit the borrower to improve service for the existing subscribers and to serve 344 rural families in the operating area now without service.

The three loans, totaling $1,130,000, will make it possible for the borrower to furnish dial service to a total of 2,322 subscribers in Otter Tail county. Automatic offices will be located at Dent and Perham in addition to the two included in the Apr. 7 loan. The completed system will consist of 751 miles of line.

Royale B. Arvig is president of the East Otter Tail company.

* * *

Pioneer Telephone Cooperative, Kingfisher, Okla., received an allocation of $338,000, on Apr. 8, second loan to this borrower. With these loan funds the borrower plans to expand the operating territory to serve portions of Blaine and Canadian counties located between the two non-contiguous sections of the present system.

As a nucleus for the new service, the Pioneer cooperative will acquire the Geary (Okla.) Telephone Co., providing dial service to 402 subscribers and switching service for 223 rural families owning their own lines.

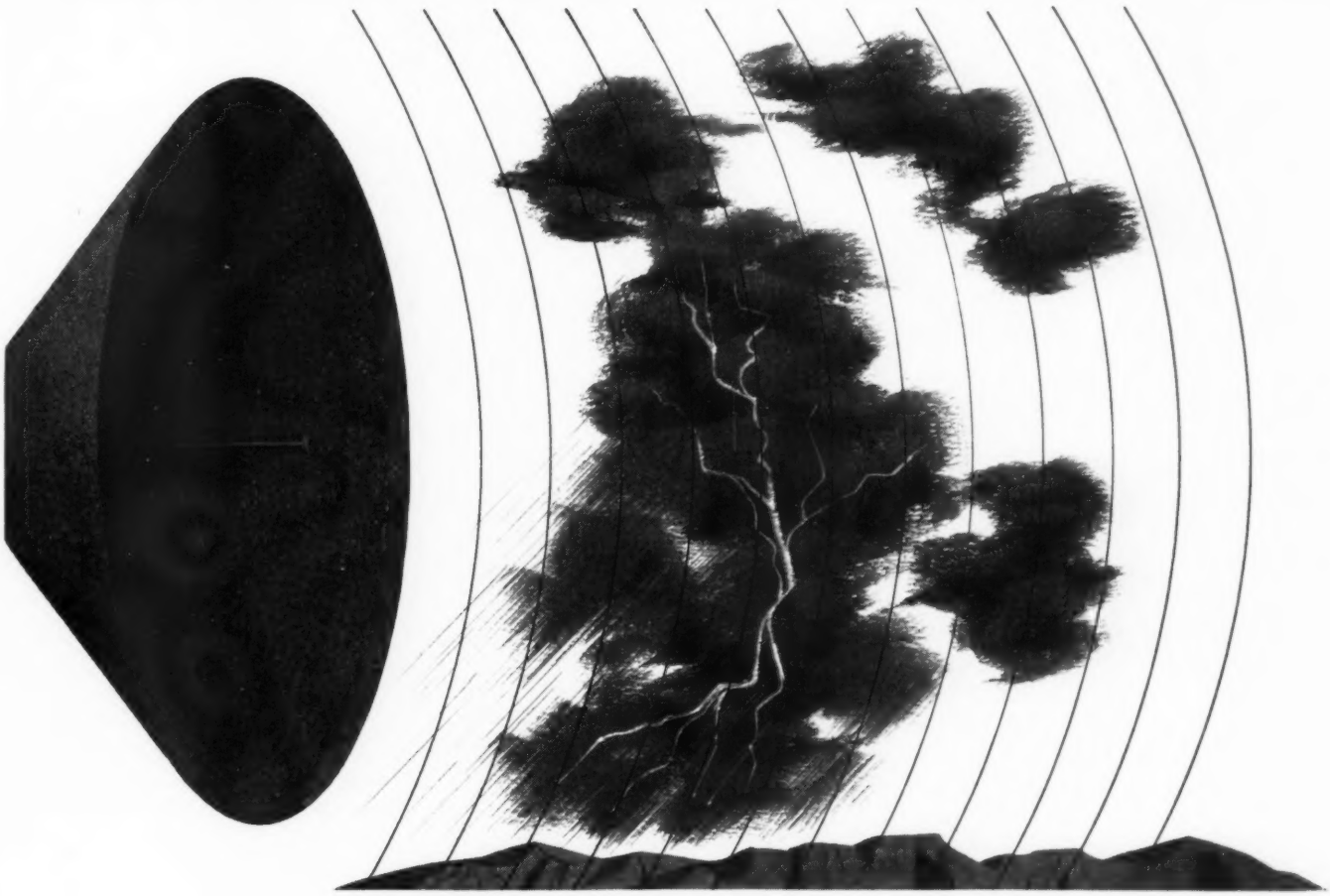
The 28 miles of acquired line will be retained in place, and the Geary attended automatic office converted to full dial operation.

About 259 miles of new line and other facilities will be added to serve 109 additional subscribers and the 223 switchers, who will disband their lines and become regular subscribers of the borrower. This section of the system, when complete, will consist of 287 miles of line furnishing dial service to 734 subscribers.

The two REA loans, totaling $680,000, will enable the Pioneer cooperative to serve 1,429 subscribers in Blaine, Canadian, Custer, Dewey and Kingfisher counties. Automatic central offices for the system will be located at Fay, Loyal, Oakwood and Omega, in addition to the new one at Geary.

T. W. Beiland is president and Roy C. Boecher is manager of the Pioneer cooperative.

99.8% EFFICIENT



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"DOWNTIME: Less than 0.2%. OUTAGES DUE TO FADING: None whatsoever. SERVICING NEEDED: Minor repairs (mostly replacements of tubes) handled by the telephone company's own maintenance men".

These figures and facts tell one company's remarkable (but not unusual) story of Lenkurt Microwave's dependability throughout a year of service.

Twenty-four channels of Lenkurt Microwave were set to work, handling the busy traffic over this troublesome terrain. Confidence in this equipment was confirmed as the months went by and outages proved measurable in minutes only—very few minutes, very quickly cleared up by minor, *indoor* maintenance!

Today, on that same stretch the telephone company maintains its physical lines—as stand-by facilities! Day-in, day-out traffic goes over equipment they can be sure of—in any weather!

Investigate *dependable* Lenkurt Microwave today—
the *weatherproof toll line* that can solve
your most troublesome problem!

Call or write Automatic Electric Sales Corporation (HAymarket 1-4300), 1033 West Van Buren Street, Chicago 7, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., Toronto. Offices in principal cities.

Low Initial Cost

Investigate Lenkurt Microwave's low first cost. You'll find it may prove in over physical equipment for distances as short as 13 miles!

Package Engineered

Automatic Electric "Follow-Thru" Engineering eliminates ALL problems in Lenkurt Microwave installation and maintenance.

Easily Serviced

"Follow-Thru" Engineering includes training your personnel in the simple techniques involved in Lenkurt Microwave maintenance and servicing.

Manufactured for

AUTOMATIC ELECTRIC

ORIGINATORS OF THE AUTOMATIC TELEPHONE

AUTOMATIC ELECTRIC—LEADERS IN CARRIER COMMUNICATION—**LENKURT**

XUM

THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

WHEN CUSTOMER direct distance dialing is placed in general operation throughout the country, it is obvious that the proper control of traffic from large PBX systems will present numerous problems.

For example, in a large commercial concern, only a few key individuals may be permitted to dial toll calls direct. Positive control must then be exercised over the telephones of the persons who are not permitted to make toll calls.

Perhaps this may be accomplished by the installation of restrictive equipment or automatic ticketing devices at the PBX.

Likewise, it may be possible to provide automatic ticketing equipment in the main exchange which will identify the calling extension from the PBX on all outward calls.

In this connection, we have confidence in American engineers and firmly believe that they will provide these necessary control equipments in due time.

However, it is believed, that as an interim arrangement, it may be possible to provide special toll trunks direct from some large commercial concerns into toll centers to serve heavy toll users. These may be either individual line telephones or trunks from a PBX switchboard.

These trunks, or lines, will all be equipped with special automatic ticketing equipment in the toll center so that an accurate machine record will be made of all calls.

The special toll trunks from the PBX may be either (1) under the control of an operator or (2) accessed only by dialing a secret code known just by the few people authorized to make toll calls.

In some cases, it might even be necessary to handle outward toll calls over special individual line telephones connected directly to the toll center, by-passing the PBX.

While adequate controls are a recognized necessity, care must also be exercised not to curtail necessary traffic. Such curtailment wouldn't prove advantageous for either the commercial concern or the telephone company.

• • •

Back in 1931, the late Maj. Gen. George O. Squire, former Chief Signal Officer of the Army, speaking before the National Academy of Science at Yale University, made the following statement:

"On Sept. 18, 1910, for the first time, two separate telephone conversations were carried on over a single 'twisted pair' wire telephone circuit between the Signal Corps Laboratory at the National Bureau of Standards in Washington, D. C., and the small laboratory at 1710 Pennsylvania Ave. Then was born the new art of wire-wireless communication engineering."

This then was the beginning of our modern carrier systems that today play such an important part in our nationwide communications.

• • •

There appears to be considerable confusion in the minds of some people regarding the various types of telephone service now available in many areas. This confusion is due no doubt, at least in part, to the different nomenclatures used in different sections of the country. Our personal interpretation indicates that essentially the following types of service are now available:

Base Rate Area: The area in which an unlimited number of calls can be made in a flat rate system or one call per unit in a measured service system.

Extended Area: Calls may be dialed by customers beyond the base rate area under the multi-unit system. These calls are bulk-billed as units on monthly statement of charges.

Long Distance Service: Calls dialed by customers or placed with the operator to points beyond the extended area and listed individually on the monthly statement of charges. To designate calls dialed by customers to points outside their local or extended service area, the phrase "Direct Distance Dialing" has been adopted by the Bell System.

It is our private opinion that the use of such terms as "Wider Range Dialing Area," "Subscribers' Toll Dialing," "Metropolitan Exchange Area," etc., only tend to confuse telephone customers and may lead to arguments regarding billing. We believe that the above or similar terms will eventually be standardized for the telephone industry in this country.

• • •

We recently witnessed an interesting application of a new traffic-measuring device. This unit is connected to outgoing trunks from a PBX. Traffic meters keep a count of all completed calls and all calls that are made into other than a one-unit zone.

From this sampling of traffic, a determination may be made as to whether or not multi-unit calls should be diverted to an operator to be handled manually or whether automatic ticketing will prove a good investment. We hope to have more information on this interesting device for you at a later date.

• • •

Down in San Antonio, Tex., recently, we attempted to look up a certain restaurant in the yellow pages of the telephone directory. We finally found it under "Cafes." This was the first time we realized that our yellow page directories did not follow a standard format throughout the country. Or perhaps Texas just wants to be different.

• • •

We noted a press release recently to the effect that an unusual intercommunication device had just been developed that will give top executives instant contact with any key employe in their office or factory. The item stated further that this device enables

(Please turn to page 34)

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For ALL your Wire and Cable Needs

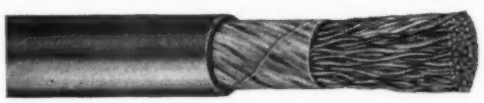
SIX PAIR RURAL DISTRIBUTION WIRE

The completely color-coded wire which has gained widespread acceptance as the most economical way to extend rural service. Construction is similar to that of 16 Pair Distribution Wire described at right. Easy to install—excellent electrical characteristics. Can also be used as multiple drop wire to small apartments and office buildings.

TELECABLE® EXCHANGE AREA CABLE

Exchange Area Cable for aerial and duct use with polyethylene insulation and polyethylene sheath . . . the thermoplastic sheath that provides lasting protection. This cable has excellent transmission characteristics and can be depended upon to give long trouble-free service. Sizes up to and including 202 Pair available.

TELECABLE INSIDE WIRING CABLE



Telecable Inside Wiring Cable has semi-rigid Plastite® insulation and brown or ivory Plastite jacket. It is light in weight and water resistant. Unaffected by humidity, Telecable inside wiring cable is ideal for duct work. Its long life assures low maintenance costs. 6 to 76 pair available.

A full line of carefully engineered and manufactured wires and cables is available for your needs.

NEW 16 PAIR DISTRIBUTION WIRE

THE MOST ECONOMICAL TEMPORARY METHOD OF EXTENDING SERVICE TO GROWING RESIDENTIAL AREAS

- **EXCELLENT ELECTRICAL CHARACTERISTICS**
- **EASY TO INSTALL**

Low-loss transmission—Low capacitance—High dielectric strength—Weather resistant.

Each individual conductor has No. 19 AWG soft copper conductors, polyethylene insulation and polyvinyl chloride jacket, completely color-coded.

Paired conductors twisted around polyethylene covered, high strength steel core.

DESIGNED FOR ECONOMICAL INSTALLATION

Light weight—Long lengths—Self supporting.

No crossarms needed.

Wire can be attached to the pole, making a neat, inconspicuous installation and requiring a minimum of trimming in wooded areas. On poles with crossarms already filled, capacity can be increased by 16 pairs by attaching this wire to the pole below the crossarms.

When necessary . . . this wire can be taken down and reused.

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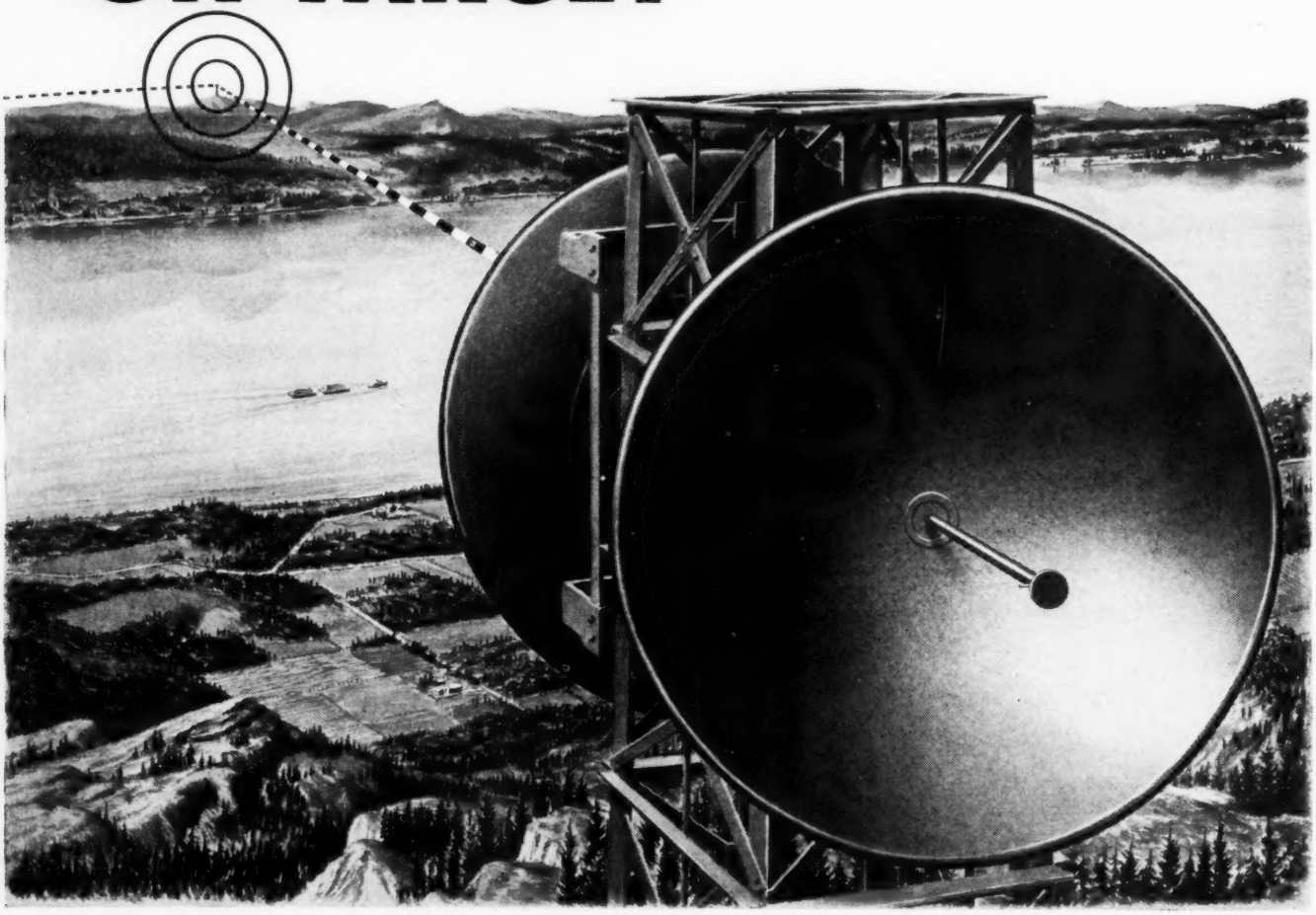

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Microwave was successfully demonstrated for the first time in 1931 by International Telephone and Telegraph Corporation. Today this system, developed and improved through the years, is made available outside the United States through ISE, associate of IT&T. Would you like the facts on what microwave can mean to *your* communications? ISE engineers will be happy to consult with you.

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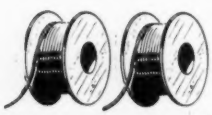

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Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.

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Hydraulic derricks designed for front or rear mounting. Capacities to 12,000 lbs.

Mechanical Ladders expertly engineered and counterbalanced for effortless handling. Maximum heights from 23' to 40'. Swings 360°; angles to 72°.

Hydraulic jacks, controlled from rear of truck. Rigid mounted or patented Holan self-stowing types.

Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter.

Service bodies for chassis up to 1½ ton. Lengths, 75", 84", 90" and 102".

Light-duty power operated derricks for front or rear mounting. Operating range of 146°.

Hydraulic towers with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

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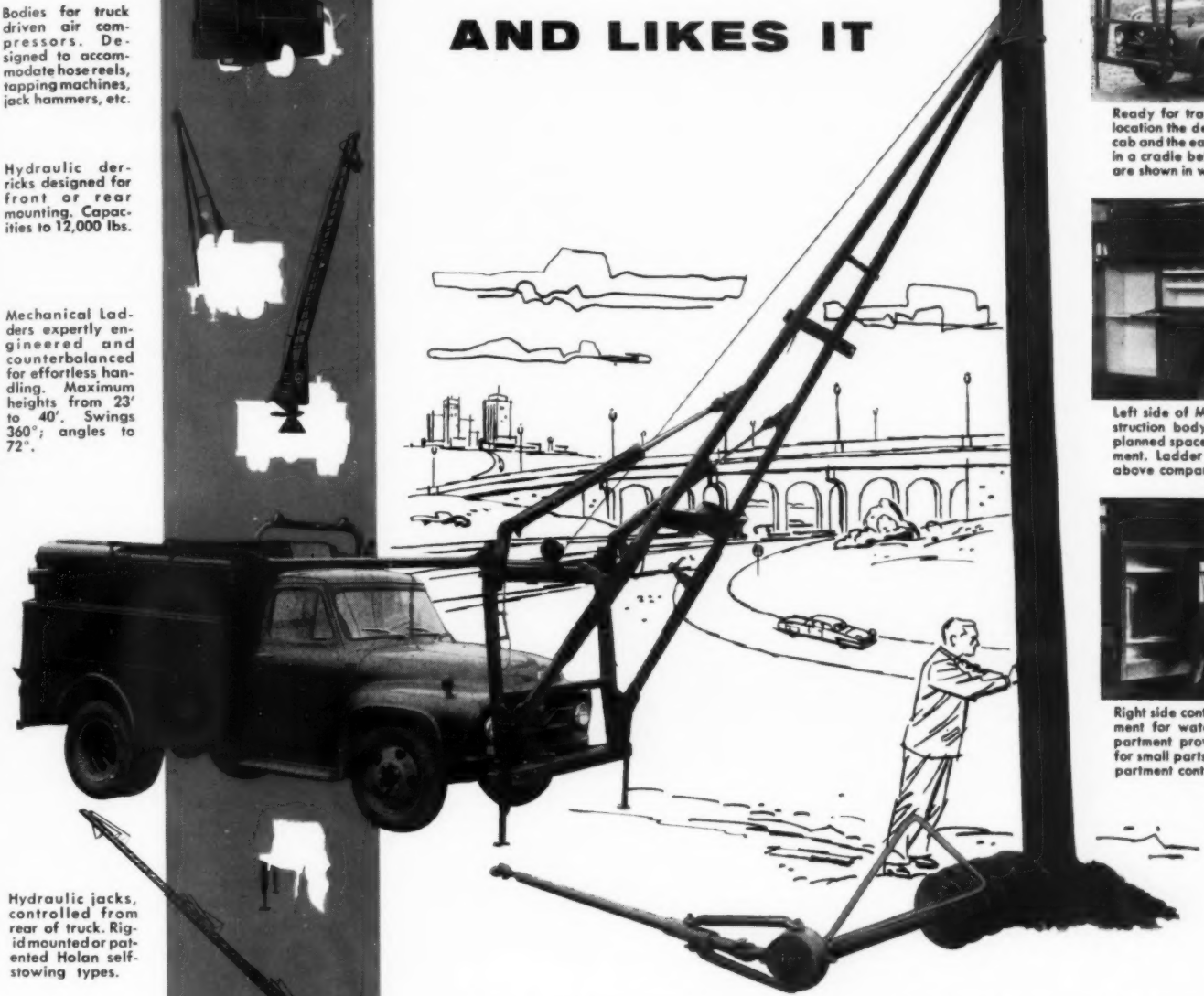
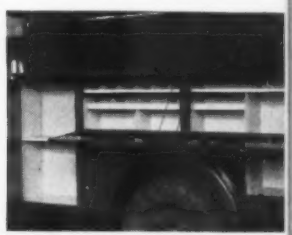
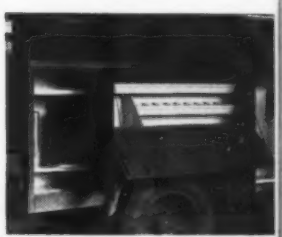


Ready for transporting to the next location the derrick mounts over the cab and the earth borer sets securely in a cradle between A-frame. Jacks are shown in working position.



Left side of Model 1989 light construction body shows ample, well-planned space for tools and equipment. Ladder racks are provided above compartments.



Right side contains special compartment for water cask. Center compartment provides adjustable bins for small parts and tools. Front compartment contains rope hooks.

Almost alone, anyway! For poles up to 40 feet you can put two men to work with Holan's new mighty midget and do a crew-sized day's work!

With digger and derrick front-mounted, the man in the cab can see what he's doing as he controls all digging and lifting operations from inside. The man outside slides front jacks into place, shifts pivot pins in the derrick, guides the earth borer and swings the base of the pole into position. You can detach the digger in a flash and use the powerful HOLAN 4700 hydraulic derrick for lifting transformers and other objects weighing up to 6500 lbs.

HOLAN'S mechanized mole, Model 4401-M Mechanical Earth Borer, quickly hooks up to the P.T.O. drive shaft and is suspended from the derrick to do its work. Completely portable, the borer is lifted and secured into its cradle between the side legs of the derrick.

The HOLAN Model 1989 Body is a light line construction body adaptable to telephone, R.E.A. and other not-too-heavy electrical work. Typical Holan designing has built efficiency into every last detail from the water cask compartment to special outside shelf for a vise. Pike poles are secured on the right, ladders on the left, in rattle-free, hold-down brackets.

What a big difference the *right* tools make in efficiency, economy and morale. Your new HOLAN 1989 will set new goals for holes and poles! Write for more information today.

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THE NAME THAT MEANS WORK SIMPLIFICATION

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the boss to override any conversation at his discretion.

This may be something new, but the writer is of the opinion that we have had such a device on dial switching systems for a number of years in the form of executive's right-of-way equipment. To the best of our knowledge, it did not prove very popular and has not been generally used.

• • •

We note with much interest that Southwestern Bell, out in Kansas, is presently using a recorded announcement of a man's voice to advise telephone users when they misdial.

This company hopes that a man's voice will reduce confusion of those who might think that a live operator has interrupted a telephone call.

• • •

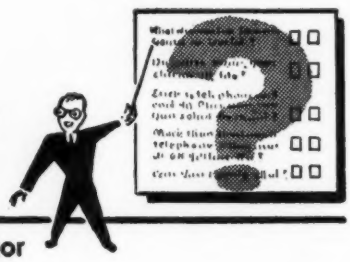
According to the gags of radio and television comedians, a telephone subscriber, even though he has an individual line, in these days of wire tapping, should not be required to pay more than the party-line rate.

• • •

Announcements have recently been made by two different companies to the effect that they have produced successful experimental models of light amplifiers. This device may eventually solve the problem of "picture-on-the-wall" or "mural-television" receivers. Light amplifiers consist of a thin phosphor film placed between electrodes. The front electrode is made of conductive glass and is transparent to permit incident and amplified light to pass.

We are advised that one experimental light amplifier has produced light amplification in ratios of more than 20 to 1. It is further stated that a ratio of only 100 to 1 is required to produce a practical light amplifier.

PLANT MAN'S QUIZ



by RAY BLAIN, Technical Editor

Q. When is protection considered necessary on a telephone station in the average exchange?

A. The general rule usually observed is to provide protection for any station that is served by conductors of any type which are exposed to disturbances from lightning or to possible contact with power carrying wires of voltages over 250. This voltage is between wires of the power circuit. Neither does it change the picture when the power wires are inclosed in grounded sheath cables or supported by a grounded messenger strand. Actually, practically all telephone stations of the present day and age require protection. The only exception to this is where the telephone system is entirely underground or inclosed in building conduit. Even then some companies resort to certain types of protection as they consider it good insurance against possible contact with a harmful foreign voltage.

• • •

Q. Please tell us what executive right-of-way service is, and how it may be provided on a small dial switching system?

A. This is a special service that can be made available by the manufacturer of your particular type of dial equipment. It may be used so that certain selected individuals may reach any other station on the system even though that station may be in use at the time. This equipment overrides the busy and makes a talking connection to the desired station.

The executive's station must be equipped with a separate circuit to provide this special service. Both lines may utilize the same telephone by having a two-way key to switch from the normal line to the special right-of-way equipment.

• • •

Q. Will it be possible to procure a tool or machine to emboss letters and numerals on a strip of aluminum for use in marking poles on a toll line?

A. These machines are available, but unless you have a considerable number of poles to mark, we seriously doubt that it will prove to be a good investment for you. It is suggested that you consider the procurement of available single aluminum letters and numerals. These are simply tacked to the poles.

To expedite this work, the single letters and numerals may be lined up on a piece of cardboard and held in place with adhesive tape. The assembly is then merely tacked to the pole in the line, as required.

• • •

Q. When repeating coils must be installed on a pole out on the line, how can they best be protected from the weather?

A. It is suggested that you procure a special protected weather-proofed housing that is manufactured and sold by all telephone suppliers for this purpose. One type mounts a single repeating coil and three pairs of protectors and another size, two repeating coils and five pairs of protectors.

The fuse and open-space cut-out protectors are necessary to prevent possible damage to the repeating coils due to lightning or accidental power crosses.

• • •

Q. When strain insulators are not used in down guys, will the anchors prove adequate grounding for the sheath on a run of aerial cable? Or, should we also use ground rods?

A. We would not care to risk a ground of this type unless an electrical strap is placed from the guy strand to the anchor rod. If this is not done, the connection at the anchor rod eye may develop a high resistance. A low resistance ground is always necessary when electrical protection is involved.

It is suggested that you test your anchors and if they do not provide an adequately low resistance ground connection, then the required number of ground rods should be added. The lower the resistance of the ground connection, the better the protection.

• • •

Q. We are wondering whether there is anything that can be done to prevent timber squirrels from gnawing lead-sheathed cable?

A. Various methods have been tried down through the years with varying degrees of success. In certain cases, the cable is covered near poles with wire screening. It seems that in the majority of cases the greater cable damage is done by squirrels in the vicinity of poles. This method, while quite effective, is also rather expensive.

Some companies have attached small pieces of rock salt on all poles of a cable lead. It is claimed that squirrels eat the lead in search of salt. Another and more recent method is to coat the cable with liquid neoprene to which has been added bitter aloes. This method, though rather new, is reported as having been most effective and economical.

Steelmaster

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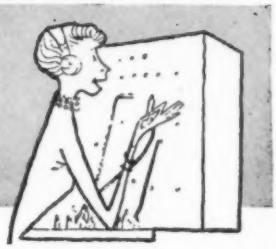

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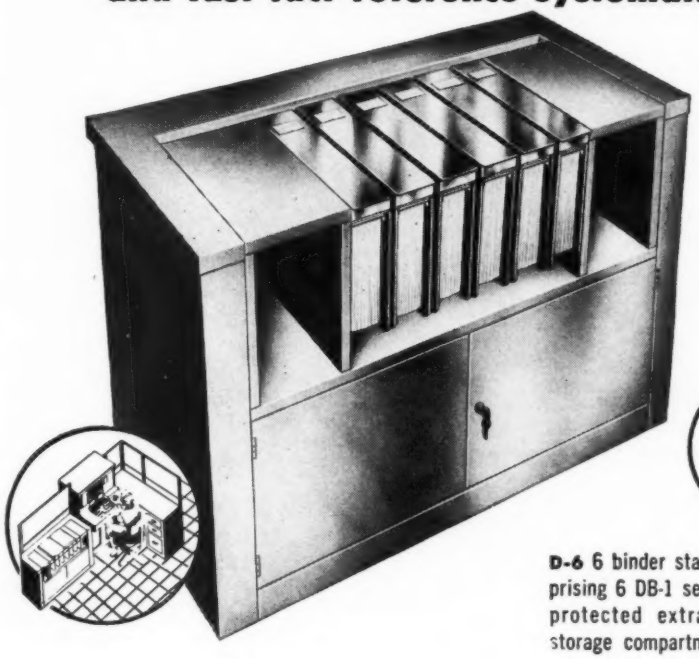

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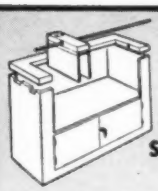

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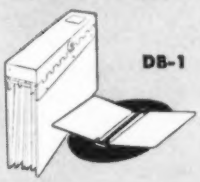

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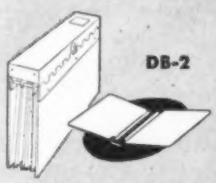
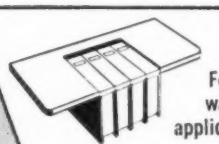


DB-2

Inside Dimensions 9" h.—1⅜" w.—11¼" d.

Other Models Available



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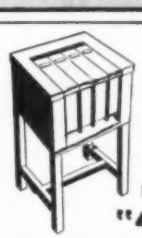

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Telephone Financing

By HENRY M. BEISSNER*

THE SUBJECT telephone financing is much too broad to be covered in a few minutes. Accordingly my remarks must be limited to broad generalizations. No two telephone companies are exactly alike and each has its own individual problem of financing its growth and development. Therefore, a separate financial program must be developed for each company designed to best serve that particular company.

I realize that some of the larger companies are represented here by financial vice presidents and to these representatives my remarks will appear quite elementary. My comments and suggestions will be directed primarily to those owners and operators of the smaller and medium sized companies who have devoted a long number of years to the operating end of the business and who could not be expected to have had much experience in the financial aspects. I shall try to keep my remarks on a "down-to-earth" basis and use non-technical terms as much as I can.

Practically every well-managed company today needs long-term capital to finance continued growth and improvement in service. The substantial cost of conversion to automatic provides the principal need for capital today. And some companies require a revamping or refunding of outstanding debt or preferred stock to permit raising additional capital on satisfactory terms.

Basic Steps Reviewed

For any company that desires to raise additional capital, I should like to suggest the following basic steps. *First*, review your accounting procedures and records. Are they prepared in accordance with accepted standards of the industry? Do you have an annual audit by an independent C. P. A.? If not, you should give serious consideration to making these arrangements promptly. You'll find these services fairly inexpensive in terms of value to you and certified reports will be necessary when you undertake to raise any substantial amount of capital.

Next, make a detailed study of your improvement program: What should be done, how soon should it be started, how long will it take, and, most important, how much will it cost. Then, select some qualified investment banking firm to assist you in arranging for your capital. Be sure that the firm selected has had sufficient actual experience in this field—that it has actually been successful in assisting other telephone companies of similar size. Ask what other companies the firm has assisted and then check back with those companies to see if they were well served and if the company would select that firm again if it needed additional assistance.

Be careful of some one "just talking a good game." This financial advisor should be employed on a contingent basis, i.e., his compensation should be based upon the capital actually raised on terms acceptable to you, and if for any reason your financial program is set aside or not completed, you will owe him nothing.

After your financial advisor has been selected, he will make a comprehensive study of your operating experience, your present capitalization, present rate structure, and then develop a plan best suited for your particular requirements. This plan will be aimed at preserving your sound credit position, making provision for additional financing in the future, and will suggest the required rate increases necessary to support the proposed new financing.

If a report by a qualified telephone engineer is required, and it will be in the majority of instances—particularly if a long-term loan is placed with a life insurance company—the financial advisor will assist you in selecting an engineer whose report will be acceptable and whose fees will be reasonable.

Corporation Necessary

If you are now operating as a sole proprietorship or a partnership, may I suggest that you give early consideration to incorporating. Experience has shown that it is extremely difficult if not impossible to arrange for additional capital on satisfactory terms unless you are operating as a corporation. And when you decide upon incorporation, you will need not only the guidance of your financial advisor but the services of a qualified tax counsel. I wish to caution you against using your local lawyer, even if he is your good friend, unless he is also experienced in this highly specialized field.

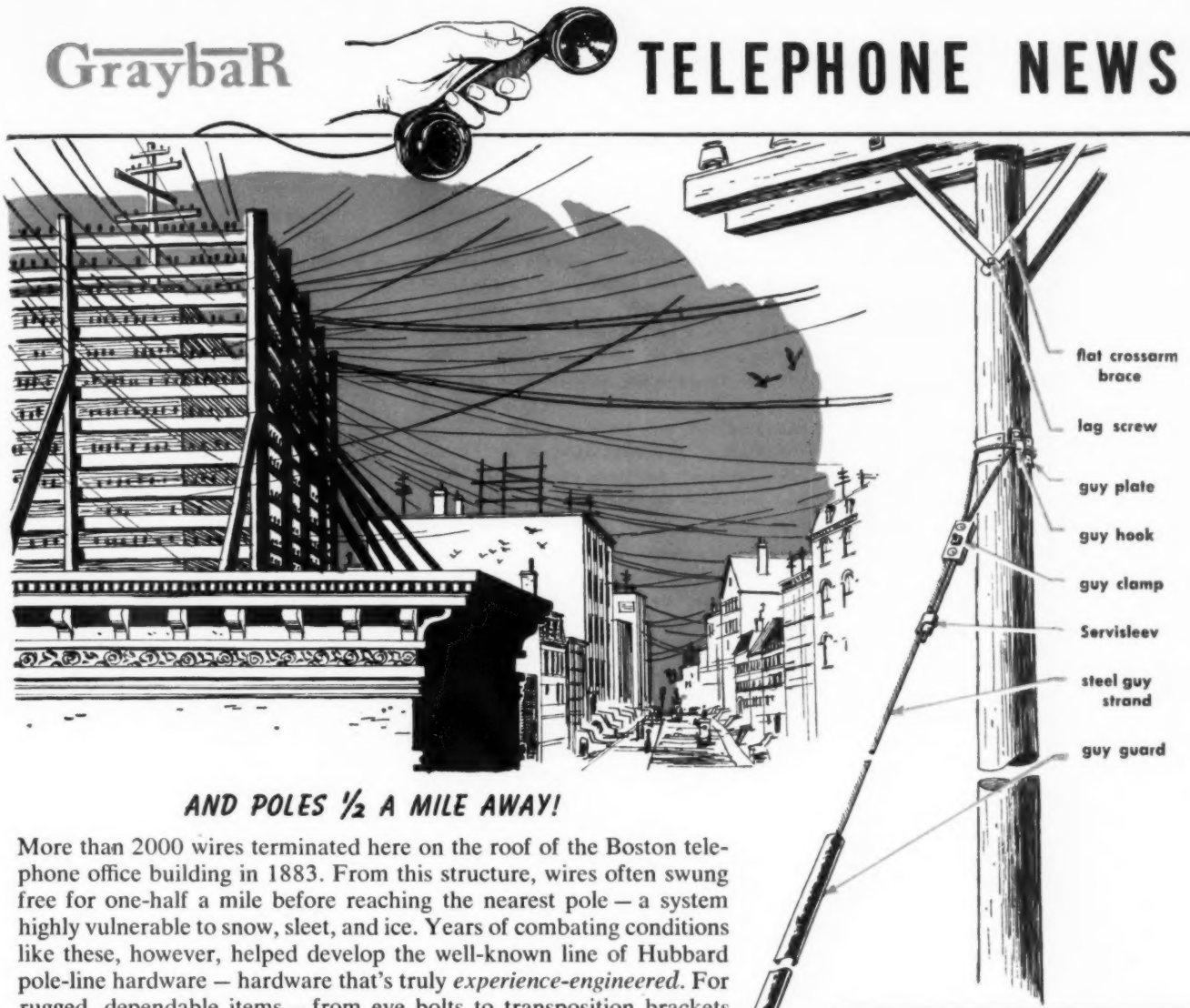
Any financial plan will be based upon upon the four basic types of securities, or a combination of two or more. These are (1) long-term debt—usually in the form of mortgage bonds; (2) short-term debt—usually in the form of a bank loan; (3) preferred stock, and (4) common stock. I shall comment briefly upon each type.

Long-Term Debt is the most common method of raising sufficient capital for a major improvement or expansion program. Insurance companies are becoming increasingly interested in buying long-term bonds of sound, well-managed Independent telephone com-

*Mr. Beissner is vice president of Moroney, Beissner & Co., investment bankers of Houston, Tex. He delivered this address at the recent convention of the Texas Telephone Association in San Antonio.

GraybaR

TELEPHONE NEWS



AND POLES ½ A MILE AWAY!

More than 2000 wires terminated here on the roof of the Boston telephone office building in 1883. From this structure, wires often swung free for one-half a mile before reaching the nearest pole – a system highly vulnerable to snow, sleet, and ice. Years of combating conditions like these, however, helped develop the well-known line of Hubbard pole-line hardware – hardware that's truly *experience-engineered*. For rugged, dependable items – from eye bolts to transposition brackets – Graybar reminds you to "hang the load on Hubbard."

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panies. As recent as only five years ago, it was difficult to find a life insurance company interested in any Independent telephone company bonds except those of the larger Independents. But now a great numer of insurance companies have become interested in bonds of the smaller companies as well.

Just two weeks ago I sent a letter to a number of insurance companies presumed to be interested and asked for their requirements as to the minimum size of the company, the minimum size of loan, and their investment yardsticks for appraising telephone loans. I was pleasantly surprised when practically all replied, almost by return mail, supplying this data. This clearly demonstrates the fact that this source of money for the sound expansion and improvement of the Independent telephone industry is far greater today than ever before.

Interest Rate Not Too Essential

In determining the amount of long-term bonds a company can issue, a number of factors must be taken into account, including: The amount of mortgage debt now outstanding; the purpose for which the money is being raised; the amount already invested in plant; the condition of the plant; the amount of junior capital employed, that is, the amount of subordinate debt, if any; the amount of preferred stock outstanding; the amount of common stock and surplus; and, of course, historic and projected earnings. In other words, the total debt to be outstanding must conform to accepted ratios, the most common being: Ratio of mortgage debt to net plant account; ratio of total debt to plant account; ratio of total dept to total capitalization; debt per station; the number of times the interest charges will be covered by past and prospective net earnings; et cetera.

These ratios vary to some degree between insurance company lenders but not very much, and each company will usually adjust its customary limits either upward or downward depending upon quality of management, earnings record, condition of plant, territory served, and other pertinent considerations.

Total debt can rarely exceed 55 to 60 per cent of the Net Plant Account (after giving effect to the investment of the new money), nor can it exceed 60 per cent of the total capitalization. Stated in other terms, the total debt cannot be more than 60 per cent of the combined total of debt, preferred stock, common stock and surplus. Total interest charges on all debt to be outstanding must be covered not less than two to three times by net earnings after depreciation but before federal income taxes.

The matter of interest rate, while obviously an important consideration, is often over-emphasized. There are many important terms in any long-term borrowing in addition to rate.

One of the most important is the *open-end mortgage provision*, which will provide for additional future debt when justified by adequate increases in the Net Plant Account, by adequate earnings and by adequate junior capital. A reasonable, open-end provision will permit additional debt up to 60 per cent of net plant additions, provided total interest charges will have been covered not less than two times and provided the total debt will not exceed 60 per cent of total capitalization.

Long Maturity is another important item. Fast retirement of debt is often burdensome, particularly when continued growth will require additional long-term capital from time to time. Postponement of principal payments for perhaps three years is often desirable, particularly when the loan is made for conversion to automatic and where earnings are expected to increase after the conversion program has been completed.

Sinking Fund Important

A proper *Sinking Fund* is also important. Unless the debt is well planned, the sinking fund (or principal payments) might be burdensome and might require the refunding of the debt on a more reasonable basis at some future time. This problem with its attendant financing costs can be avoided if the proper terms are arranged initially. A sinking fund, based upon certification of net property additions is highly desirable. This means, that instead of providing cash to apply to debt retirement, you merely supply a certificate that funds have been spent on plant improvement.

For example, if your sinking fund payment in cash should amount to $1,000, you could be relieved of paying this $1,000 in cash for debt retirement if you can certify that you have spent at least $1,700 on your plant. This $1,000 cash would, therefore, be approximately 60 per cent of the $1,700 certified as net plant additions. Some of the more progressive insurance companies will agree to this because they realize that their loan is as well protected by the additional investment of $1,700 in plant improvement as it would be if the loan is reduced by $1,000.

In other words, the insurance company is merely investing another $1,000 in your company against your spending $1,700 in plant improvement. Other insurance companies will agree to a sinking fund based partly upon cash and the balance subject to certified plant additions, while some companies will insist upon cash sinking fund payments only.

A reasonable *Call Price* is another important item. If you later find that it is desirable to call your debt to permit refunding at a lower rate of interest or for borrowing in a larger amount, or if you wish to retire debt ahead of schedule, you should arrange initially for the minimum penalty.

A reasonable provision calls for a premium during the first year of approximately 4 per cent with this premium declining a fixed portion each year until you can call or retire without penalty.

A Frozen Surplus

Another usual provision is to *Freeze the Surplus*. This means that no dividends on common stock can be paid except from net earnings subsequent to the date of debt issuance. This merely protects the lender against paying future dividends out of surplus previously accumulated and which must be retained as protection for the loan. This provision should not be objectionable. You wouldn't want to pay dividends, anyway, unless they have been earned.

In planning your program for debt-financing, your financial advisor will have to carefully take into account many things, particularly if you have debt now outstanding. Your present debt may be left undisturbed, particularly if you were far-sighted enough to provide for future financing through additional debt, and if you borrowed at a low rate of interest. But it might be desirable or necessary to refund that debt into a new larger issue. This decision will be governed by the individual circumstances.

Short-Term Debt is the most logical type of financing under certain circumstances. This is often the case when funds are needed for conversion to automatic. The procedure goes something like this. You arrange for a commitment from an insurance company to buy your long-term bonds *after* your conversion program has been completed.

In the meantime, you arrange for an interim loan from a bank, whereby the bank agrees to lend you an agreed upon amount of money which you will takedown from the bank as you need it—and you pay interest only on the money you have actually borrowed.

(Please turn to page 85)

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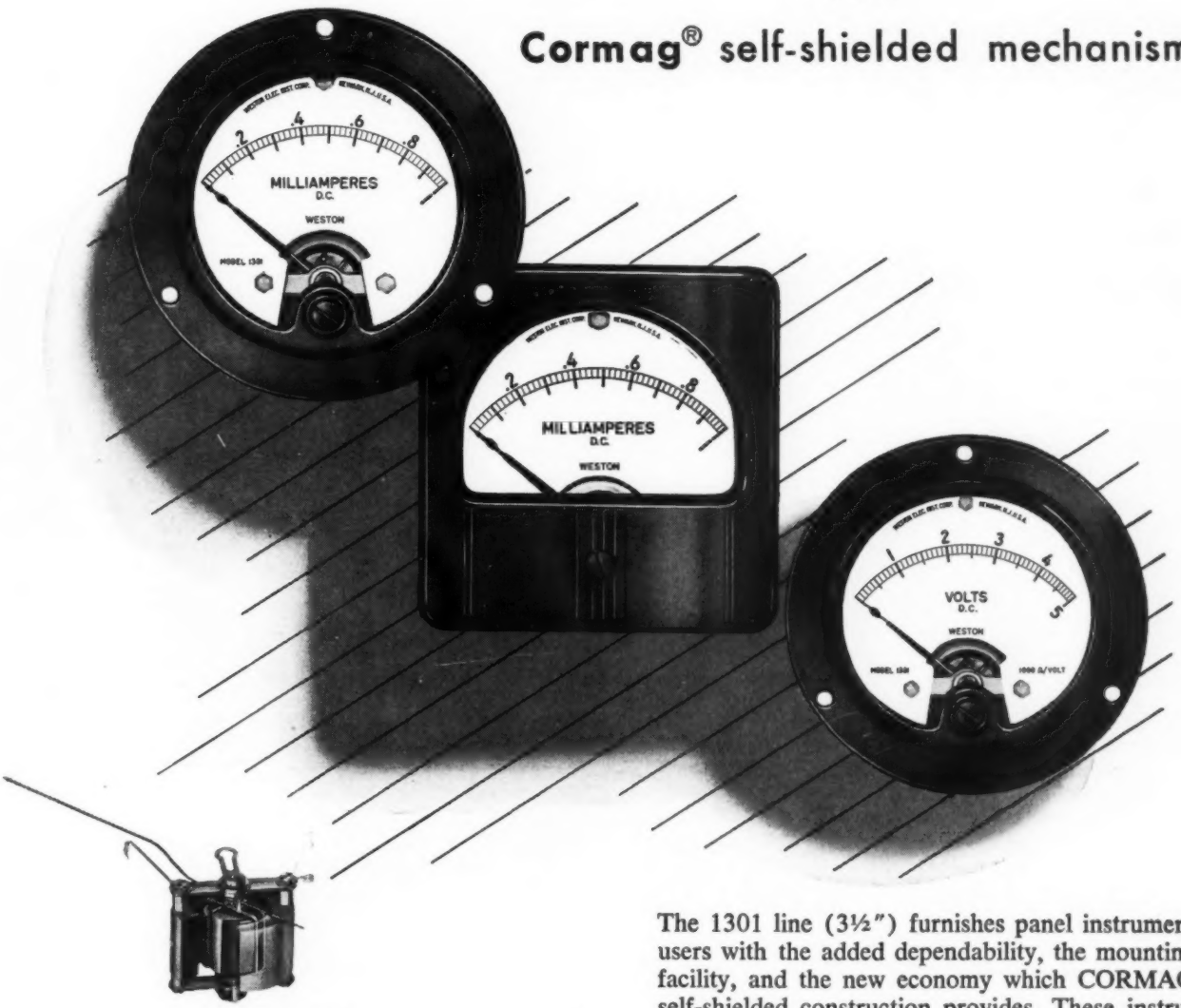

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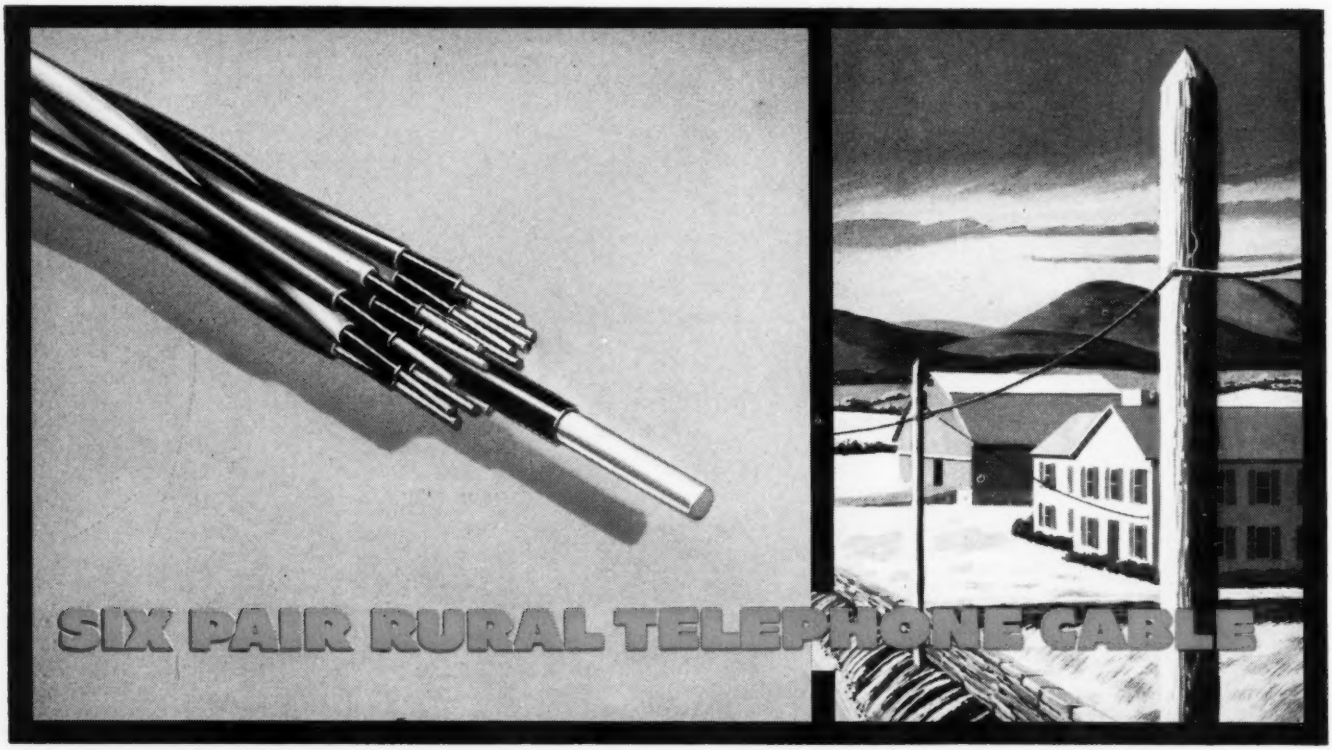

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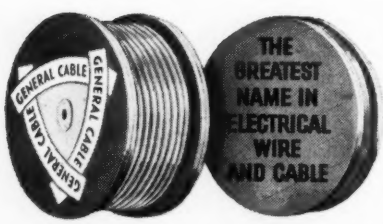

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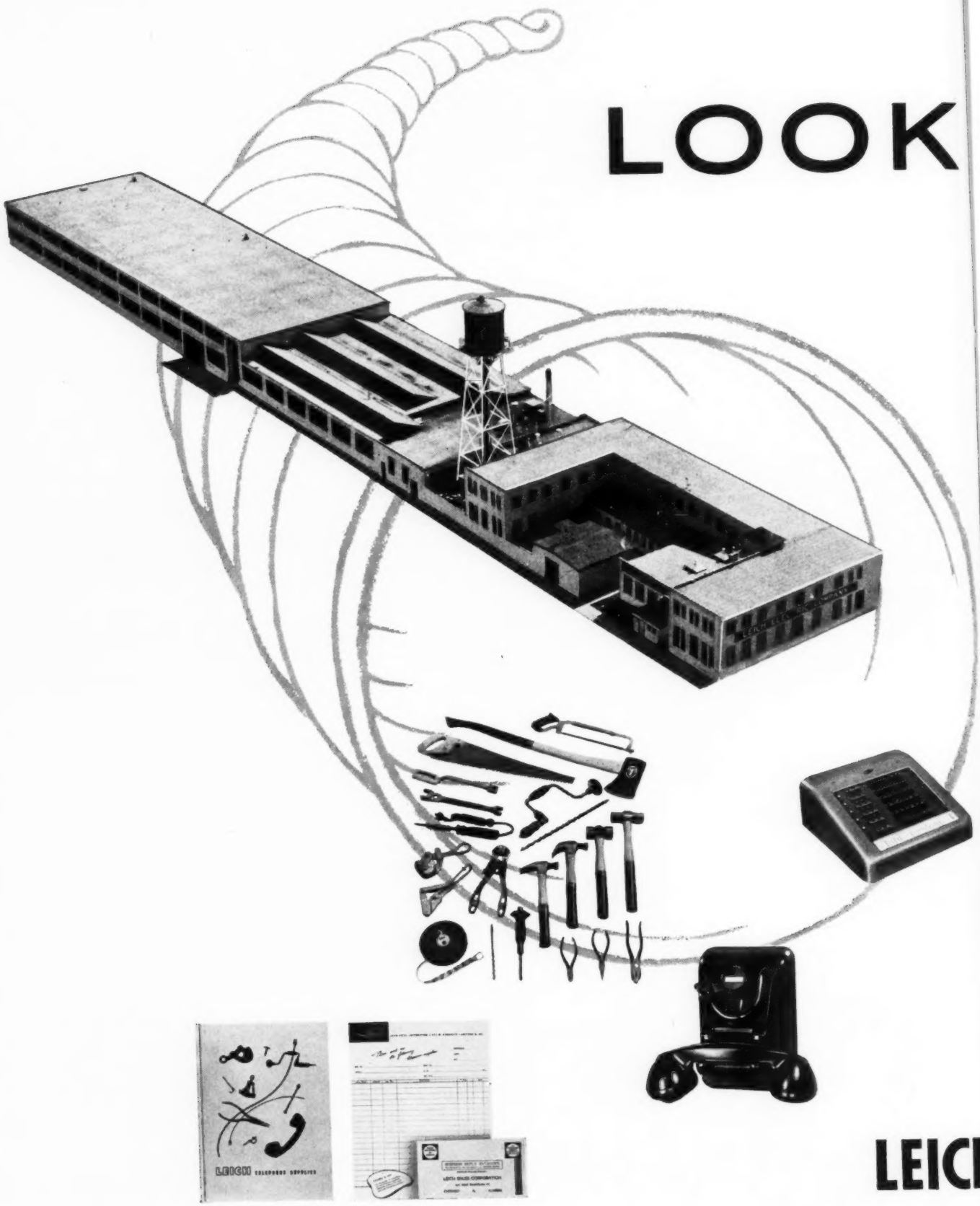
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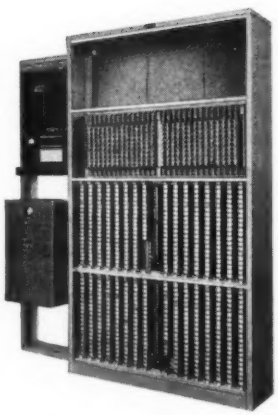

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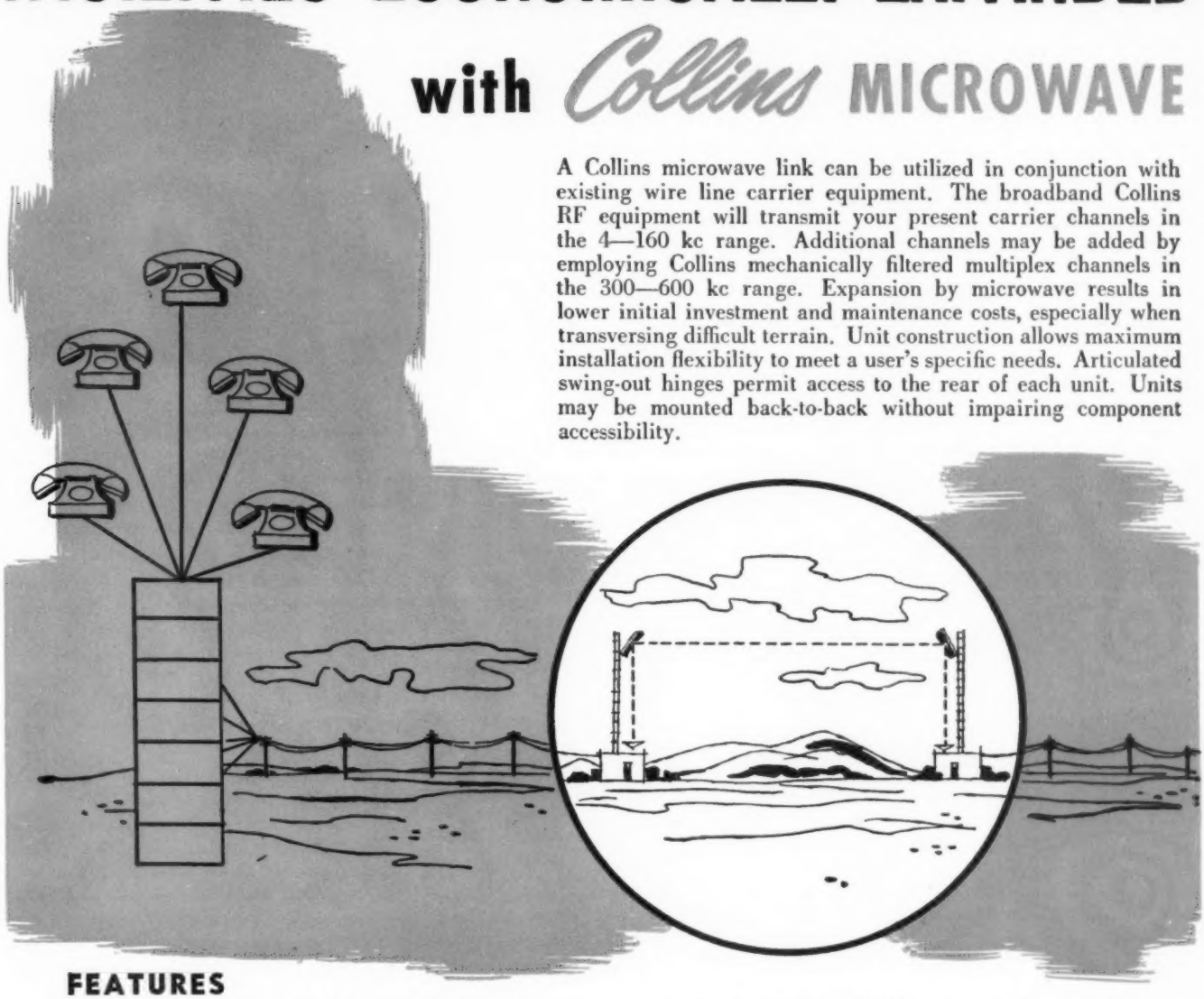

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Effective SUPERVISION in 1955

By DR. A. Q. SARTAIN*

ONE RATHER recent development in business and industry has been an increase in the attention paid to human relations problems. Before World War II the human factor in productive work was pretty largely taken for granted. We seemed to feel that if we furnished an individual with good materials, good machines, good methods, good working conditions, and perhaps incentive wages we had done all that management could do, or could be expected to do, to motivate him to work effectively.

We now realize that this view is a limited and inadequate approach to the problem. People want the things we have just mentioned (though it is obvious that incentive pay is evaluated differently by different people). But they can have all these things and still be unhappy and comparatively unproductive. As a supervisor or an executive of 1955 how do you deal successfully with the human factor in production?

Recent Developments

Before we attempt to answer that question, let's raise another. Are there things that have happened in the United States in the last generation or two, things that have an influence on effective leadership? In other words, is effective supervision in 1955 different from effective supervision in 1905? Is the 1955 model of American worker different from the 1905 model?

Expanding Economy. Certainly one way in which things have changed is in the productivity of American industry. It is well known, for example, that productivity in this country has definitely increased in the past and continues to increase each year. The rate of this increase is 2 per cent per year or better.

Perhaps this has influenced supervisor-employe relationships most directly in the increasing standard of living. In an article entitled "The Changing American Market" in the August, 1953 issue of *Fortune* it was stated that while in 1929, 29 per cent of the family units in America had incomes of between $3,000 and $10,000 per year (in terms of 1953 dollars and allowing for taxes), by 1953 that figure had risen to 58 per cent. Not only does the worker get many more dollars in 1955 than he did in 1905, but his wages will buy much more in the way of goods and services. This certainly makes a difference in how he feels and how he should be supervised.

Downgrading of Many Jobs. Another development which I think is significant is the increase in the number of jobs which demand close attention or much repetition on the part of the worker but which call for little exercise of judgment or originality. We have tended in recent years to build the skill into the machine (or to put it in the engineering, production planning, and like departments) and hence to demand less and less, especially in the way of decision making, from the operator.

Perhaps the best example of what I have in mind is the difference between the old-time craftsman and today's assembler or other mass-production worker.

The craftsman was called upon to make choices, to exercise judgment, and to do planning. As you well know, in many situations today's worker has only a minimum of opportunities along this line. And I think that affects how he feels, the kind of person he is, and how you lead him successfully.

Growing Sense of Independence. One of the developments of the recent past has been a growing sense of independence and individual worth on the part of the common man in the United States. It has been said that this is the age of the common man, and I think there is a great deal of truth in that statement.

Increasing Education and Communication. One of the biggest contributors to this sense of dignity and worth on the part of the common man is the American ideal of education for all. It is little short of phenomenal how much progress we have made toward that goal. For example, in World War I the average man in the service had completed six grades in school. In World War II, that figure had become eight grades. In 1900, less than one person in 10 who entered the fifth grade stayed on to graduate from high school. Now that proportion is about one in two. In 1900, only one young person in every 25 of college age was in college. In 1952, this figure had become one in six. It is hardly necessary to add that educated workers expect and even demand a different sort of treatment from that given to uneducated workers.

Legislation and Court Decisions. Certainly legislation of the past 20 years and decisions by administrative bodies and the courts have greatly increased this feeling of independence on the part of the common man. It makes little difference what you choose here: Legislation relating to collective bargaining or social acts or others giving rights to minority groups—these things

*Dr. Sartain is professor of psychology and personnel adminstration at Southern Methodist University of Dallas, Tex., and he gave this address at the recent convention of the Texas Telephone Association. He also is an author of the book "Human Relations in Industry," by Finlay, Sartain and Tate, which may be purchased through TELEPHONY.

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have had profound effect on the spirit of the times.

It is, of course, important to note that while these things have affected the spirit of the times they are in part the result of that spirit. However much we may approve or disapprove of these developments, we have to accept many of them as coming from strong feelings on the part of the average American about the dignity and the rights of Americans.

Women at Work. Closely related to the point we have just made is the fact of the increasing numbers of women who are gainfully employed. At present this number is in excess of 19 million or about 30 per cent of our entire work force. Interestingly enough, more than half these women are married, and over 40 per cent are 35 years of age or older.

Perhaps this is most important for our present purposes mainly because it emphasizes the early points about the rights of all people — including women. Women are demanding equal treatment — and fair and respectful treatment — from the supervisors of 1955 and are nearer to receiving these than women workers have ever been before. Certainly this has influenced all worker-supervisor relationships in 1955.

What Does It Mean?

My remaining question is, what does all this mean to the supervisor of 1955? On the basis of what we have discussed, and considering other developments as well, how should you supervise today?

How Good an Example Do You Set? We Americans have a lot of faith in words and when someone does something he shouldn't we think we should tell him about it. When someone needs to acquire a skill he does not now have we emphasize proper instruction. Words seem to us to have—or come close to having—a magic power.

I would not say anything to detract from the value of skillful conversation or speech-making, but often the real question for a supervisor is, what sort of an example do I set? What about my attitudes, my real devotion to my job and the company? What about my own ethical standards? What about my concern for my fellow human beings, those who work here and those who do not? What kind of an organization would this one be if every person in it were just like me? That question certainly causes us to stop and think at times.

What About Your Emotional Balance and Control? The rest of what I want to say may be just an elaboration of the previous point, but several questions are still worth asking. Certainly, one of them relates to this matter of emotional balance and control.

Perhaps you've known supervisors, and even executives, who supervised primarily in terms of their feelings. Perhaps they are subject to great swings in emotion, happy and agreeable one day, and very irritable and difficult the next. It is interesting how your associates adjust themselves to your changing moods if you are this sort of a person. But let me quickly add that, while they may adjust to your changing moods, they don't admire you for them. The supervisor of 1955 just can't afford to supervise this way.

This point applies with real force to matters of discipline, for so frequently we discipline, not in accordance with what the offender has done, but according to how he has made us feel. It also applies to promotion where, no matter how much we may think that we personally are exempt, we all have a tendency to favor our friends and discriminate against those whom we do not like. I need not comment on the disastrous effects of this sort of action.

Are You Willing to Do Anything You Ask of Them? One of the temptations of a supervisor or an executive, especially of a person who has just been made a supervisor or an executive, is to throw his weight around, issue orders, and in general, tell other people what to do. Now, there is no question but that someone has to call the signals, and also no question but that there are things that it is not advisable for the boss to do. But my point is simply this: The people who are your subordinates are still people. Furthermore, they are your equal in the eyes of the law and in the sight of God and man, or at least they have the right to be. They may not be your equals in authority or intelligence or wisdom, but they are creatures of value and worth, and you must treat them accordingly. They are your *associates*, your partners, in the enterprise, and the chances are that most of you will sink or swim together.

I have been trying to say that you should not do everything you ask them to do, but that you should be willing to do so. Nobody in the United States is too good to do anything in the United States that needs to be done.

Are You a Good Listener? Earlier we mentioned the dependence of most Americans on telling people things. Somehow, as we said, there is a feeling that the really good supervisor must be good with words, good at expressing himself. Of course, this is an important skill. But there is another skill almost, if not entirely, as important as skill in telling, and that is skill in listening. By listening you can frequently learn a lot. But what may be more important, by listening you often help the other fellow convince himself or help him get some emotional release from a troublesome problem. It is probably safe to say that the sort of communication that changes attitudes and values and feelings seldom occurs unless the one to whom it is directed has a real opportunity to talk.

And so the question—How good are you at listening? Do you really *want* to listen? Do you really want to hear what they want to say even if it involves criticism of you? Can you really take it? These are questions of great importance to the supervisor of 1955.

Are You Keeping Them "in on Things?" The more a person thinks of himself as free and independent, the more he is going to insist on knowing what is going on and why it is going on. Certainly the 1955 model of American is no exception to this statement. He insists on knowing what is happening, and why, and frequently goes to great length to get the answer to both questions.

This puts a heavy responsibility on a supervisor. It means that he must be very careful not to conclude that people know more about what is happening that they do, or that they know as much as they want to know—or are entitled to know.

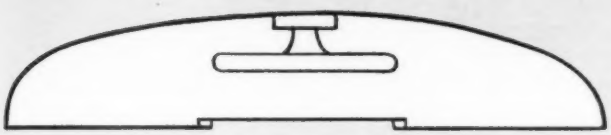
It also means a great deal of consultation with his subordinates individually. He must inform them, it is true. But he must also find what is on their minds and give them a chance to express their opinions.

It also means a lot of meetings for, say what you will, things will come out and certain kinds of planning will be done—only in a group. Obviously, a supervisor can spend too much time in consulting and also have too many—and the wrong kind of—group meetings. I am convinced, however, that most of us do too little, and not too much, of both of these.

What I am really trying to say comes down to this: You must keep them informed about the things they want to know about and have the right to know about. And also you must *earnestly* and *sincerely* seek their ideas and suggestions. When people are kept "in the know' and their ideas earnestly sought and fairly and sincerely considered they usually feel that they are "in on things."

Are You Appealing to Their Need to be Needed? One need of people that

(Please turn to page 87)



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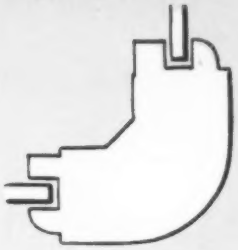

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Common Sense Battery Maintenance—Section II

By L. N. MARTIN

WE STARTED this subject in our preceding article (TELEPHONY, Feb. 2, p. 20). That article covered the specific gravity readings which is the most important test of a storage battery. Another important test consists of voltage readings. Unlike the gravity readings no permanent record of voltage readings is necessary.

In an article entitled, "Significance of Storage Battery Voltage" (TELEPHONY, Aug. 28, 1954, p. 21) we discussed this subject at length. We suggest that the reader review that article at this time.

When a battery is operated by the continuous automatic float method a voltmeter is used to set the floating voltage and to make frequent checks to see that it stays at that value. When a battery is to be floated at 2.17 volts per cell, that means 2.17, not 2.18 or 2.16. Now in a 22-cell battery a variation of .01 volt per cell means a variation of .22 volts in the battery as a whole. Therefore, a voltmeter that can be read correctly to within about .2 volt is required. The meter usually recommended for this purpose has an accuracy of one-half of 1 per cent of full scale. For the 48-volt battery a meter with an 0-60 scale would probably be used. One-half of 1 per cent of 60 is .3, therefore, it may seem that this meter does not quite meet the accuracy requirement. However, the accuracy rating refers to all parts of the scale, including readings near zero where it is more difficult to secure accuracy. Since the lower half of the scale of the battery voltmeter is never used, and the readings all fall in the most accurate part of the scale, this meter is quite satisfactory.

However, a better arrangement is a large "suppressed zero" meter with a 30-60 scale. One-half of 1 per cent of 30 is .15, therefore, this meter will meet the accuracy requirement throughout its scale. The meter should be connected directly to the battery over its own leads and should be mounted where it may be readily seen.

A rectifier has a voltmeter mounted on it but this is often too small to be read accurately, may not have the required accuracy, and, furthermore, it is not connected directly to the battery. There will be a variable IR drop between the rectifier and the battery, however, it is possible that in a small installation where the rectifier and battery are very close together this IR drop may be negligible.

PART 43. The preceding article in this series appeared in the Feb. 2 issue, p. 20.

While the large suppressed zero meter which we have described is highly desirable, a small company may make the readings at the battery terminals by using a portable meter that meets the accuracy requirement. However, in this case, the readings must be regularly scheduled (at least once per day), whereas with the large meter mounted on the power board the voltage may be observed at a glance.

We see no reason why any record should be made of these voltmeter readings.

In an office which uses a charge-discharge method there is not so much need for an accurate battery voltmeter.

The reason for making individual cell voltage readings, and the method of doing so, was fully covered in our article of Aug. 28, 1954. A portable voltmeter that may be read accurately to .01 volt is used. The method is as follows:

(1) Place the battery on a steady charging current. (Readings while the battery is on float are valueless.)

(2) Read the voltage of each cell and record these readings on scratch paper.

(3) Add the readings and divide the sum by the number of cells in series to obtain an average reading.

(4) Check the voltage of each cell against this average. Cells which differ either way from the average by .03 volt or more are possibly in trouble.

Should this routine be followed in all offices? It has been our experience that most of the trouble disclosed by this test is also disclosed by the individual cell specific gravity readings. However, in a few cases, the voltage test was our first and only indication of trouble. If a company decides to set up this test on a routine basis it should be scheduled monthly or quarterly for batteries on float and in connection with each equalizing charge for a battery on a charge-discharge method.

We see no reason for making a permanent record of these voltage readings. They may be recorded on scratch paper and discarded after they have served their purpose.

Should periodic equalizing charges form a part of the battery routine? What is an equalizing charge?

Let us see what happens when a battery is charged. The charge consists of chemical changes in the active material of the plates. This active material is in a finely divided form and is inserted in pockets in the plates. (Note: In one type of positive plate the active material is in the form of ribbons which are tightly rolled and inserted in holes in the plate.) The frame of the plate, which is made of lead alloy, may take some part in the chemical action but this is probably negligible.

At the positive plate the charging current changes lead to lead peroxide (PbO_2). When the last atom of lead is changed to PbO_2 the charge is absolutely complete. Nothing can be accomplished by continuing the charging current. At the negative plate, the charge changes lead sulphate ($PbSO_4$) back to metallic lead. When the last molecule of sulphate has disappeared nothing further can be accomplished by the charging current. Such a state of absolute charge is never attained

(Please turn to page 58)

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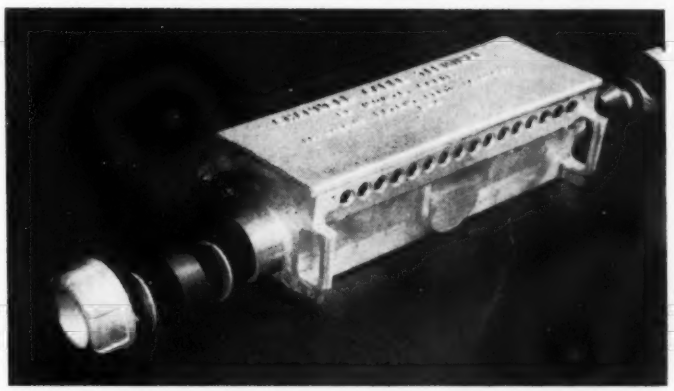

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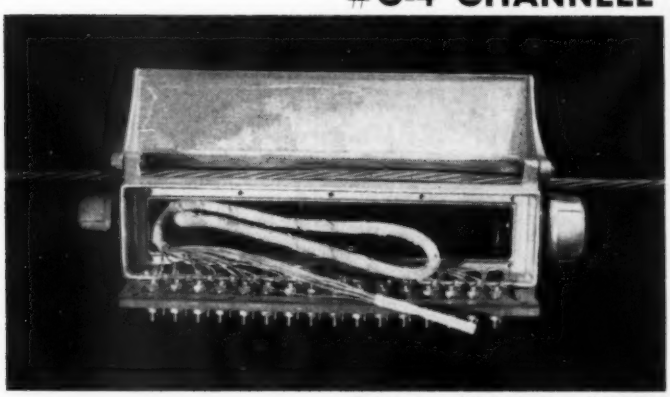
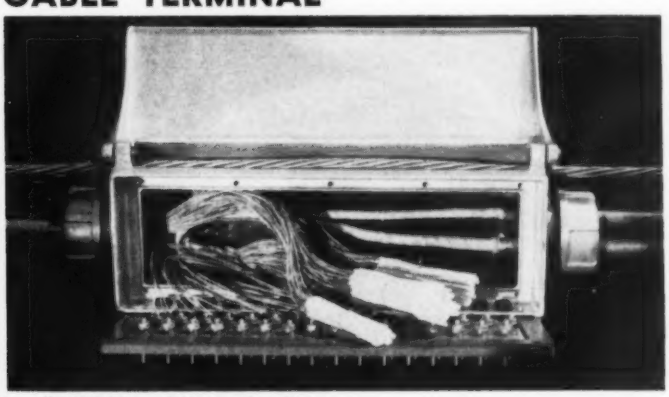
#C-4 CHANNELL CABLE TERMINAL





Patents—#2318755—#2434102—#2683304—Others Pending

#C-3, 16 PAIR CHANNELL TERMINAL INSTALLED ON END OF CABLE. NOTE SLACK FOR FUTURE USE.

#C-4, 16 PAIR CHANNELL TERMINAL, BRANCH SPLICE, IT ELIMINATES 3 WAYS AT THESE POINTS.

NO SPLICING IS REQUIRED TO INSTALL CHANNELL TERMINALS ON STRAIGHT CABLE, CABLE IS PULLED THRU TERMINAL, SLACK IS LEFT AND THE WIRES ARE TERMINATED WITHOUT CUTTING.

CHANNELL CABLE TERMINALS

No. C-3
FOR THE FOLLOWING SIZE CABLES

26 GA.	24 GA.	22 GA.	19 GA.
11 PR.	11 PR.	11 PR.	11 PR.
16 PR.	16 PR.	16 PR.	16 PR.
26 PR.	26 PR.	26 PR.	26 PR.
51 PR.	51 PR.	51 PR.	
76 PR.	76 PR.		
101 PR.	101 PR.		
152 PR.			

No. C-4
FOR THE FOLLOWING SIZE CABLES

26 GA.	24 GA.	22 GA.	19 GA.
202 PR.	152 PR.	76 PR.	51 PR.
303 PR.	202 PR.	101 PR.	76 PR.
		152 PR.	101 PR.
		202 PR.	

Order Now!

PRICE LIST

6 PR. C-3 TERMINAL COMPLETE	$15.50
11 PR. C-3 TERMINAL COMPLETE	$17.85
16 PR. C-3 TERMINAL COMPLETE	$19.75
NEOPRENE GROMMETS*	$ 2.95

*6 to a box

11 PR. C-4 TERMINAL COMPLETE	$19.95
16 PR. C-4 TERMINAL COMPLETE	$21.85
26 PR. C-4 TERMINAL COMPLETE	$23.75
NEOPRENE GROMMETS*	$ 3.25

*6 to a box

All prices F.O.B. El Monte, California

NOTE:—IMPORTANT WHEN ORDERING TERMINALS

In order that we supply the right grommets, please specify the MAKE, SIZE, GAUGE and TYPE of cable they are to be used on. (Lead or Plastic)

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"Simplified

NORTH'S
new N-541
Telephone
DRILLS—CORNER BRACES
Stanley Ratchet Reaming Hammers
Timken Automatic Push-drills
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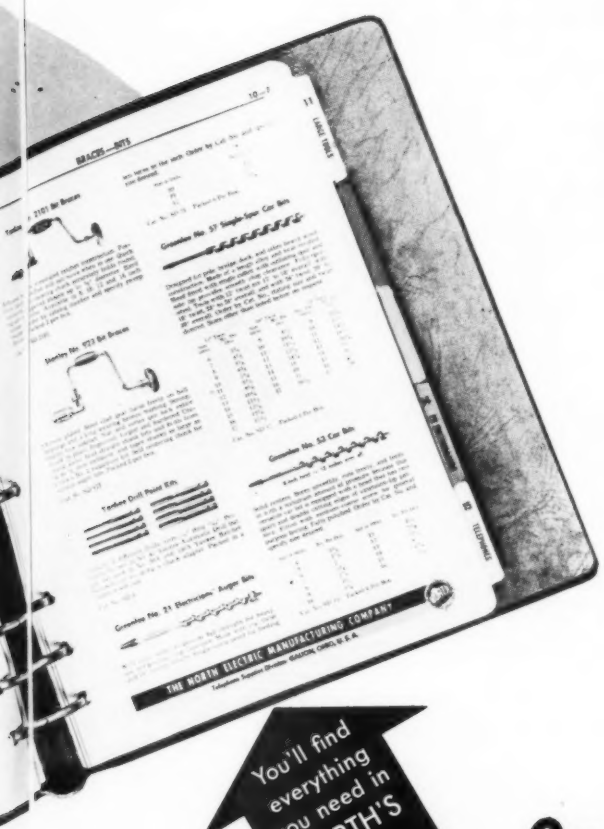
Construction"



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You have at your fingertips three tools for greatly simplifying that job. They are—your North Catalog No. 4, your telephone and the North sales engineer in your area.

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NOW WE CAN HELP YOU:

1: REDUCE cable splicing costs even more.
2: Make the splicers work EASIER.
3: Eliminate many troubles and delays caused by wrapping cable ends.
4: Still further SPEED UP new cable splicing operations.

These objectives are accomplished by the use of the following recently improved and some COMPLETELY NEW devices.

Figure 1

The still further improved Model C Meter Unit, Model CMU. Three Test sets in one—The MURPHY ONE MAN CABLE PAIR IDENTIFIER, The Buzzer Continuity Tester—and the Ohmmeter for locating trouble. A new larger case to accommodate the larger, heavy duty, longer life battery. Special bracket and clamp to hold the battery in place. The battery is now clamped between neoprene pads so it can't shift, can't short out, and leakage can't damage the case. Spring steel SPEED NUTS are used to attach the rear panel to the case so the threads can't strip. The buzzer is insulated from the case. Lettering is stamped into the case so it can't wear off.

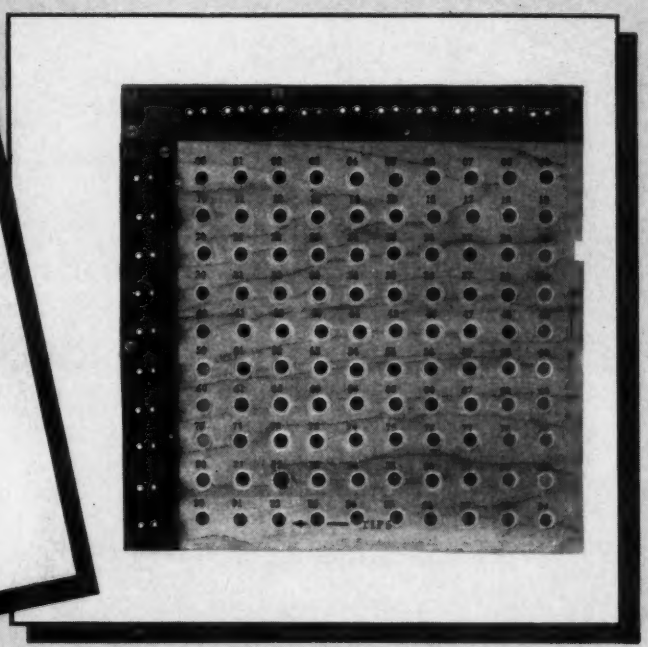


Figure 2

The completely new—COMBINATION TAG AND TERMINATING BOARD, Model TTB. This is the new board that automatically sorts and groups the wires just the way you need them for connecting to the binding posts of the Terminal Board—only, in this case, the Terminal Board is built right onto the Tag Board.

MURPHY ENGINEERING LABORATORIES, INC.

4419 TULSA HOUSTON 24, TEXAS

e, manpower & money

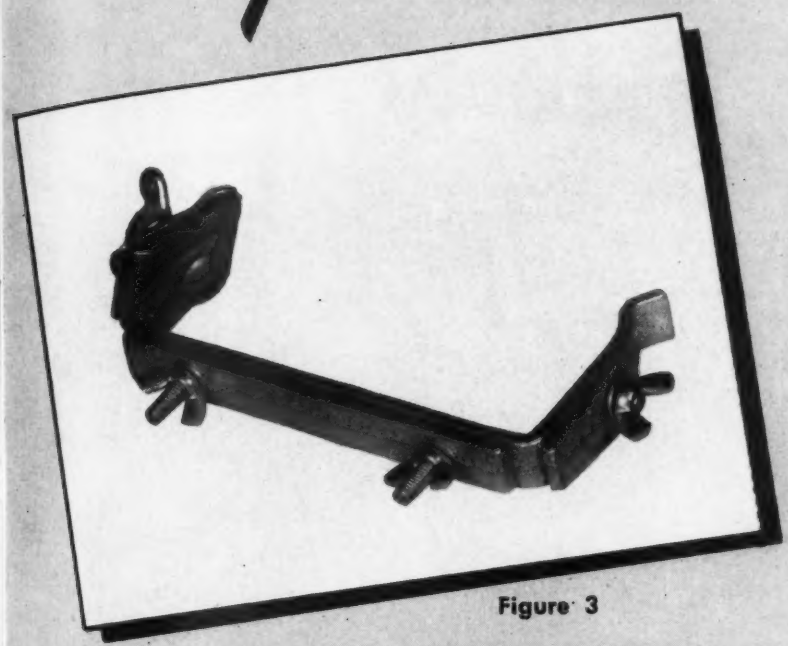


Figure 3

Figure 5

The VARNISHED HARDWOOD CARRYING CASE, Model WC, for the combination Tag and Terminating Board. Sturdily constructed to adequately protect the Terminating board against damage during storage or transportation. Neoprene pads to cushion the board and eliminate damage from abrasion even while in the box.

The DUAL PURPOSE CLAMP, Model DP. This is the clamp that will hold the Terminating Board at any angle, above or below the strand—for greater convenience and speed in boarding a cable. The clamp can also be used to hold the present standard tag board in position while using the earlier type of Terminal Board.

This same DUAL PURPOSE CLAMP is also used to hold the METER UNIT above the strand, right over the splice, at any convenient angle, for the greatest visibility of the meter face.

All bolts used in the clamp are bradded so the wing nuts can't get lost.

THE NEOPRENE BAG, Model NP. You simply slip it over the Terminating Board and tape it down around the cable armor, to seal out the weather. The Bag is made of U.S. Navy Specification High Tear Nylon Fabric covered on both sides with a heavy coating of neoprene. This almost indestructable bag can be used over and over again, hundreds of times. This is the end of tightly wrapping the terminal board and causing trouble by the pressures necessary to get a good seal.

Now, for the first time, ONE MAN can test to identify cable pairs and do it three times as fast as two men could formerly do the same job. "ONE-MAN" splicing crews are now a reality. On new cable work, labor costs are reduced by from 30% to 50%, depending on just how far you are prepared to go in utilizing the One-Man crew.

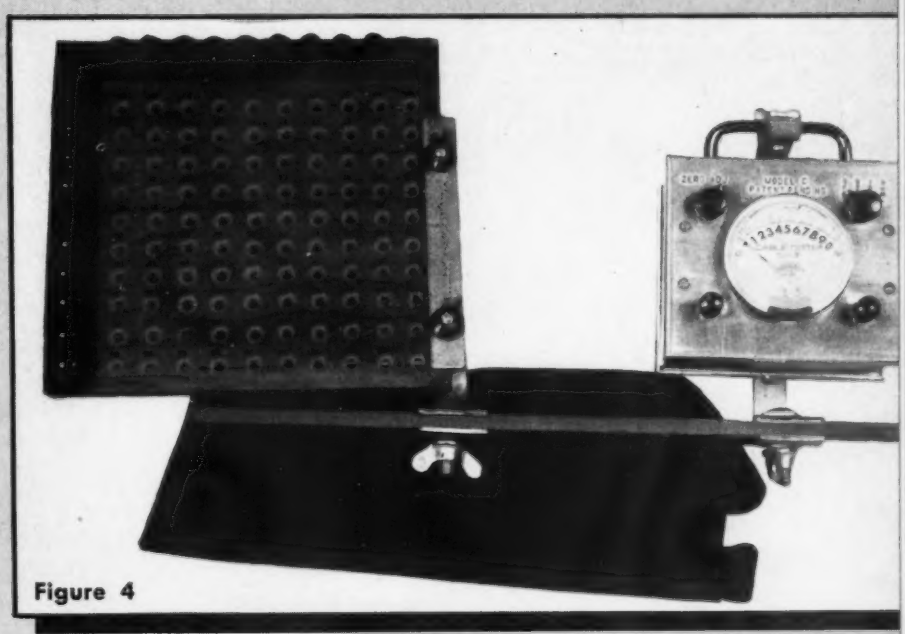


Figure 4

Price List of Murphy Cable Tester Units

Model	Description	Price each FOB
CMU	Model C, Meter Unit Only, Aluminum Case for Large Battery	$62.70
LC	Leather Carrying Case for Meter Unit, Foam Rubber Lined	12.00
TB	Terminal Board, Complete, Earlier Type, 2¼x10½ inches	36.00
TTB	Combination Tag and Terminating Board, 8⅜x8⅜ inches	43.00
WC	Wood Carrying Case for TTB above, none sold without case	6.00
DP	Dual Purpose Clamp, for attaching TTB and CMU to Strand	4.00
NP	Neoprene Bag for covering TTB and Cable end against weather. Can be used over and over	4.00

Write for quantity Prices in lots of 10 or more. Get the benefit of quantity prices by sending in a blanket order now, and send individual shipping instructions later.

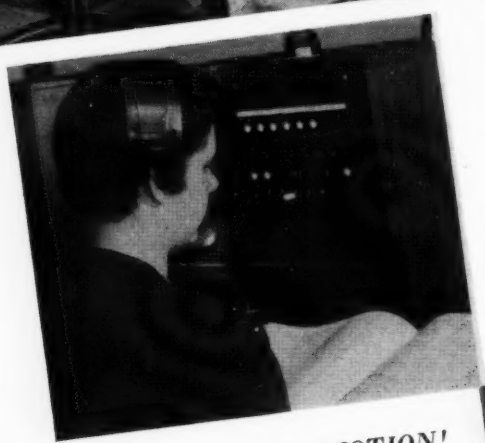
Write Now RIGHT NOW

XUM

This Automatic Board gives... fastest-ever

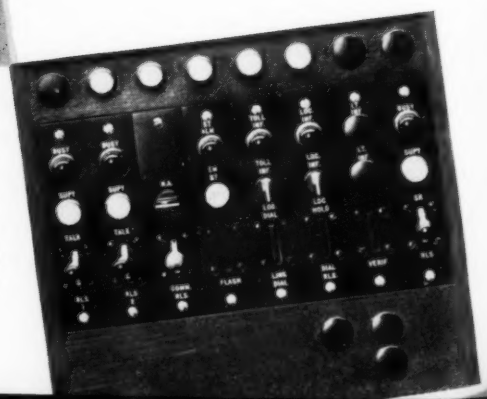
LESS "LOOK-UP TIME"

is assured by a special arrangement which holds up to six large directories at each operator's fingertips. Armrests cut fatigue. Plexiglass partitions baffle sound of page-turning.



NO WASTE MOTION!

All operators' lamps and keys are concentrated in one convenient panel. A turn of a key enables operator to handle local information only, toll only, or both.



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...er "Information"!

The Type 6 Information Board offers AUTOMATIC DISTRIBUTION OF INCOMING CALLS—an exclusive feature that enables fewer operators to handle more calls—and do it faster.

Now, for the first time, you can buy an information board that uses automatic switching equipment to distribute incoming calls!

Less work, no confusion, greater efficiency
Once an operator flicks her key to "TALK," calls flow in automatically—all she has to do is look up information! Each call goes to only one operator; there's no confusion. Operators work at 100% efficiency as each is linked to all trunks through the automatic switching equipment. Physical "reach" does not determine an operator's capacity.

Double identification, faster release
A "zip" tone identifies a call coming from another operator; "zip-zip" marks an outside call. Location of caller is indicated by a lighted group-lamp, enabling operator to anticipate type of information desired. A common-release key enables operator to speed up termination of calls by eliminating the time lag of the caller's hang-up.

Easy servicing, easy expansion
All automatic equipment is installed in another room where your men can maintain it conveniently, without disturbing the operators. As traffic grows, you can add positions easily. No wiring problems, no capacity limits.

"Follow-thru" engineering guarantees satisfaction
Your Type 6 Information Board will be engineered by specialists, to meet your specific needs. Through the life of the equipment, these same experts will always be ready to help you. Get full facts in Circular 1846. Address:

Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7.
Or, call HAymarket 1-4300.

AUTOMATIC ELECTRIC

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in practice and we will show that it would be impracticable and uneconomical to attempt it.

This is what happens. When the charge is started the current carries atoms of oxygen to the positive plate and atoms of hydrogen to the negative plate. At the positive plate each pair of oxygen atoms finds an atom of lead and unites with it to form a molecule of PbO_2. Now when the plate becomes well charged it is difficult for the oxygen to find an atom of lead that has not already been appropriated. If the oxygen touches the positive plate before it finds a free atom of lead, it loses its electrical charge and escapes as a gas. The same thing happens at the negative plate, except that the escaping gas is hydrogen. Therefore, when the charge has advanced to a certain stage the battery begins to "gas." Gassing represents a waste of power.

As the charge becomes more nearly complete it becomes more and more difficult for the oxygen to find the lead and the hydrogen to find the sulphate radical, therefore, more and more gas escapes and more and more power is wasted. The battery is said to be "gassing heavily." If the charge were continued to a state of absolute charge, from then on 100 per cent of the power would be wasted.

It follows, therefore, that what is called a charged battery is not completely or absolutely charged but has been charged up to a certain point as determined by arbitrary rules. There are several kinds of charges, the most complete of which is the "Initial Charge."

The Initial Charge is usually given by men from the battery company or switchboard company which installs the battery. (A small battery may receive its initial charge at the factory.) The instructions may differ with different companies and as the telephone company is rarely called upon to give this charge, we will not give any rules here.

The next longest charge is the "Equalizing Charge," so called because it is intended to equalize the charge throughout all the cells of the battery. A charge is ordinarily controlled by reading the specific gravity of the pilot cell, but some of the cells may be less active and lag behind the pilot cell. The equalizing charge allows time for such cells to catch up with the rest.

The usual rules for making an equalizing charge are:

(1) Charge at the normal rate until *all* cells are gassing freely.

(2) Continue the charge for one hour after the specific gravity of the pilot cell has ceased to rise. (Note: This assumes that the charge is continued at the normal rate. If charging is half the normal rate, use two hours instead of one hour, etc.)

More detailed instructions are as follows: "After all cells are gassing freely, read the specific gravity of the pilot cell every 15 minutes—if charging at half rate, every 30 minutes. At each reading take the temperature of the electrolyte and compute the corrected specific gravity. Continue these 15-minute readings until five consecutive readings show no rise in the corrected specific gravity.

Some companies have now modified the last sentence to read: "Continue these 15-minute readings until five consecutive readings show not more than one point rise in the specific gravity." This avoids excessive charging in case there is a slight error in reading the hydrometer or the battery comes up very slowly.

When should an equalizing charge be given? Opinions may differ, but this writer's recommendation is as follows:

(1) Battery on automatic *high* float. (2.17 per cell or higher) No serious power interruptions have occurred. *No equalizing charge is required.*

(2) Battery on automatic high float. Battery has had one or more discharges due to power failure or other causes. *One equalizing charge per year is required.*

(3) Battery on charge-discharge routine. *Equalize quarterly.*

(4) Battery on trickle charge. *No equalizing charge required.*

The term "Regular Charge" is more often used in connection with the charge-discharge method. The battery is charged until the specific gravity of the pilot cell is a specified number of points (usually 5) below that attained on the last quarterly equalizing charge. For a battery on float a regular charge would consist of bringing the specific gravity up to where it was before the discharge.

The "Boost Charge" is a charge by time (usually about two hours). No readings are taken and no record is made. Many companies give this once per month to a battery which is on float. It compensates for any small discharges that have occurred unnoticed and is not continued long enough to constitute an overcharge or to cause any appreciable waste of power. Just throw the switch to "charge" and leave it there about two hours.

The "Trickle Charge" is a continuous charge at a rate that is slightly above the average load during an operating cycle, such as a week. It is also given to cells that are rarely discharged such as "end cells" and the starting battery for the diesel engine. In the latter case, the rate should be very low—just a trickle. Batteries taken out of service for more than a few days should be placed on trickle charge.

The "Capacity Test" is an important test because it answers the question: "How long will our battery last if we have a power failure?" A new battery is engineered to have ample capacity to take care of any foreseeable power failure. If trouble such as sulphation develops, which lowers its amphere-hour capacity, the battery may still be perfectly satisfactory as long as it is floating or has had only minor power interruptions. However, in case of a long power failure this battery may be exhausted long before expected and cause a service failure.

Many years ago it was a common practice to make an actual test of a battery's capacity by discharging it through an artificial load until the voltage began to fail. This often caused a number of trouble reports. This practice was discontinued because of the trouble it caused, and on account of the danger to the service, should a power failure occur just as the discharge was completed and the battery was without any reserve.

A test set has now been developed which will test a single cell in one minute and use only 3 per cent of its reserve and yet will accurately determine its amphere-hour capacity. Each cell is tested separately without disconnecting it from the string or interfering with service in any way.

This test should be made at least once per year and also at any time that cell trouble is discovered or suspected. Ask your supplier about this set. If a small company cannot justify the purchase of such a set, they could probably borrow or rent one at least once per year.

An old-fashioned visual inspection should be an important part of the battery routine and should be scheduled at least monthly. A list of things to look for would be endless. Just look at *everything.* However, in the case of many batteries used today, the outside of the cell is all that can be seen. Appearance and cleanliness are important. The cells must be clean and dry and all connections tight and free of corrosion.

If the jars are glass, examine the two negative plates that are visible. They should be a soft gray color and the entire service should have a uniform appearance. White spots or a triangular white patch in one of the upper corners indicate the beginning

(Please turn to page 87)

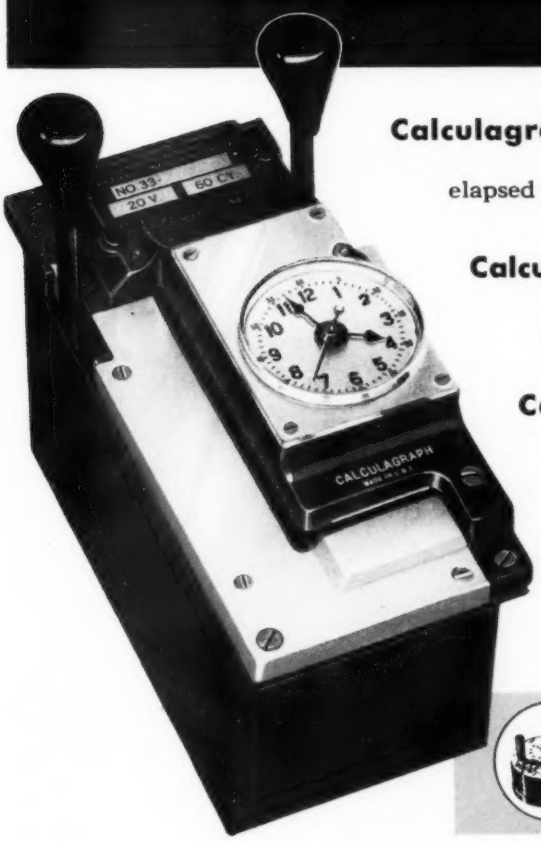
Spotlighting toll service—

CALCULAGRAPH

...speeds toll service

...protects toll revenues

Photo courtesy of
Kellogg Switchboard and Supply Company



Calculagraph automatically figures toll time – Eliminate time-consuming, service-slowing manual figuring of elapsed time on toll calls. Calculagraph is quicker, easier, completely accurate. There is no possibility of clerical errors.

Calculagraph is accurate to the second – Precision calculations by Calculagraph are accurate down to the last second... make it possible to collect all the revenue due on every toll call. Calculagraph records are indisputable.

Calculagraph prints permanent toll records – Elapsed time records printed on permanent toll tickets make accounting methods simpler, more efficient. Tickets are easier to read, permanently legible, available for reference at any time.

AUTOMATIC TOLL TIME CALCULATING AND RECORDING PAYS! Complete information is contained in the Calculagraph Bulletins available in a handy file folder. Write for your copy to Dept. TY.

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THE STANDARD OF ACCURACY . . . SINCE 1892

XUM

The OPERATOR'S CORNER

by MAYME WORKMAN, *Traffic Editor*

WHEN A TELEPHONE company employe retires, it is an occasion for a get-together or party to pay tribute to a co-worker for his or her many years of faithful service in the telephone industry. The retirement of Miss Lydia Hoffman, former chief operator at Warsaw, Ind., and chief operator at Plymouth at the time of her retirement, was the occasion for such a party given by employes of the United Telephone Co. of Indiana, at a clubhouse in Plymouth, recently.

Miss Hoffmann's retirement, which became effective Jan. 1, 1955, climaxed a telephone career extending over a period of 43 years. She began her telephone career with Central Union Telephone Co. at Hartford City, Ind., in 1912. In 1915 she transferred to the Indiana Bell Telephone Co., at Huntington, where she worked in both the commercial and traffic departments. After having attained the position of supervisor at Huntington, she was transferred to the Indiana Bell Telephone Co. offices in Fort Wayne in 1923, where she worked for two years.

Miss Hoffmann moved to Warsaw in 1934 where she accepted a position as a regular operator in the local telephone exchange. Subsequent promotions led to her appointment as chief operator at Warsaw in August, 1935, a position she held for 17 years.

In August 1952, Miss Hoffmann was transferred to Plymouth to become chief operator of that important toll center in northern Indiana.

Decorations at the retirement party were red and white in keeping with the Valentine season. The guest of honor was presented with a corsage.

After a delicious ham supper a program followed, with short talks by R. F. Lucier, president and general manager, G. A. Steele, vice president, and Miss Marie Jellison, traveling chief operator. Jack Cluen presented to Miss Hoffmann a $50 "wallet of wishes," a gift from employes of the Plymouth and Warsaw districts.

On the night of Miss Hoffmann's retirement party, Indiana had a temperature of 10 below zero and lots of snow. Did that keep telephone folk from attending her party? It did not! One couple drove 75 miles to be present and Miss Marie Jellison, president of the J. K. Johnston Chapter of the Independent Telephone Pioneer Association, in the true spirit of a Pioneer, drove 235 miles to pay tribute to Miss Hoffmann, her friend and former co-worker.

In a letter received from Miss Hoffmann, she related a few highlights of her telephone career. According to Lydia, she began her telephone service upon graduation from high school, collecting rentals and toll from business places, at Hartford City, Ind., in June 1912.

Miss Hoffman had the privilege of using the first mobile radio circuit in Warsaw, where a sleet storm had broken every long distance line with the exception of Princeton, a tributary. Engineers from Indianapolis set up the equipment at the edge of town and only one person could handle all of the calls. It was the only outlet for two days.

While residing in Plymouth, Miss Hoffmann was active in church and civic affairs, in the Business and Professional Women's Club, and was vice president of the club's hospital auxiliary.

Miss Hoffman is a charter member of the J. K. Johnston Chapter of Independent Pioneers and was one of its first directors and its first vice president. She was also active in promoting an annual Pioneer breakfast held in conjunction with the Indiana state convention.

Will Lydia be on the shelf now that she has retired? Certainly not! On the date on which her retirement became effective, she launched upon a new career, closely affiliated with the telephone industry in which she spent so many happy years, as receptionist and PBX operator, First National Bank, Warsaw.

Said Lydia, "I like my new work very much and hope I will be able to stay with the bank for a long time. I know nearly everyone in town and now I see them face to face."

Congratulations upon completing a successful career in the telephone industry, Lydia, and best wishes for many happy years of achivement in your new field. You have established a record in the industry which bears emulation. We hope we may do as well.

Traffic Questions

(1) When should the subsequent attempt be made when you receive a report of OD?

(2) If, while waiting for the called telephone to answer, the calling party indicates that he believes the telephone will not answer, how should the operator proceed?

(3) In reaching the called telephone, if the calling party hangs up without waiting for a DA report, what should the operator do?

(4) If the calling party hangs up without waiting for a "don't answer" report and hang-up occurred before you ordered the distant operator to keep ringing or gave a preliminary report, and the telephone is DA after the usual action has been taken, should the call be canceled without giving the report?

(5) When the outward operator reaches an intercepting operator and the distant operator asks what number you are calling, what should the operator say?

Answers are presented on page 79.

V V

"We have the job of telling our employes the facts as they are today and as they undoubtedly will be for some time to come. We need their help in meeting this situation and, in turn, they will help themselves in obtaining greater job security."—L. M. CASSIDY, *chairman of the board, Johns-Manville Corp.*

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PWC®
ELECTRICAL WIRES, CABLES & CORD SETS

RURAL DISTRIBUTION WIRE

TYPE 177

6 PAIR #19 AWG SOLID

PWC Type 177 Rural Distribution Wire provides an economical and reliable method of extending rural line service to your customers. The six pairs of #19 Solid Copper Conductors are insulated with high dielectric polyethylene and individually jacketed with a tough weather resistant vinyl compound. All pairs are fully color coded for immediate identification. Each pair is accurately and individually twisted to minimize cross-talk.

The assembly of pairs is cabled around an extra high strength #109E steel messenger (breaking strength 1800#) that is insulated with black polyethylene compound.

The economical features of initial cost and installation have made this product very popular throughout the telephone industry.

Write today for Installation Practice Bulletin #102 and information concerning both Type 177 and the 16 Pair #19 Type 178 Wire.

PLASTIC WIRE & CABLE CORPORATION

JEWETT CITY, CONN.

XUM

"Going Like Sixty"

Theme of Ohio Convention

By R. C. RENO

"GOING LIKE SIXTY" was the theme of the Diamond Anniversary Convention of the Ohio Independent Telephone Association, held on Mar. 28, 29 and 30 in Columbus.

The Ohio association—said to be the oldest state association in the United States—was founded in 1895 in Columbus.

The convention sessions were presided over by three officers—President R. R. Waltz of Delta; Vice President Ralph Mateer of Warren and Vice President H. F. Clapper of Greenville.

George C. McConnaughey, formerly chairman of the Ohio Public Utilities Commission and recently confirmed Federal Communications Commission chairman, in the opening address of the convention, laid the responsibility for just regulation of public utilities on the "intelligence and integrity" of the regulating agencies.

Commissioner McConnaughey reviewed the history of regulation and public utilities in Ohio and told of their recognition as "desirable monopolies." He mentioned various theories of regulation and said:

"I have been of the opinion that the public receives the best protection when the regulatory agency is alert and intelligent, always looking toward the protection of the public.

"In this connection, there is an added obligation of the regulatory agency to see to it that the investors receive a fair return on their investment and that the regulated companies have enough money to conduct their operations in an efficient manner, particularly toward required expansion. These are fundamental concepts and the regulatory agency is not assuming its full responsibility unless it gives credence to all three of these factors."

The commissioner compared the purchasing power of common stock earnings for industrial companies with public utilities from 1940 to 1952. He said that industrials had increased 28 per cent in those years, while utilities had decreased 24 per cent. He continued:

"It is my judgment that the entire crux of regulation as I previously indicated lies with the integrity of the regulators. I believe it was Dean Pound of Harvard who once made the statement that it is not so much the method used in setting rates as it is the intelligence and integrity of the regulators.

"In order for a regulatory agency which has supervision over public utilities to properly function, it must be permitted to act completely in an independent manner. By that I mean not subject to outside pressures, be they private or public."

DANIEL W. DeHAYES, secretary-treasurer of the Ohio Association presenting his report.

Mr. McConnaughey concluded:

"I do think that here in Ohio the record is clear that for most part there has been an alert and intelligent regulatory commission under whose jurisdiction you have operated. In particular, the commission staff over many years has an outstanding record for fine public service.

"You men and women comprising Independent telephone companies are indeed to be congratulated for the forward steps you have made in attempting to improve service under conditions which have not always been easy."

John A. Greene of Cleveland, president of the Ohio Bell Telephone Co., in an address on "A Salute to Ohio Independents," paid tribute to the Independent companies. He said:

"The present system of sharing responsibility for providing Ohio's telephone service has been in effect now for 30 years. Working together, the two Bell companies (Ohio Bell Telephone Co. and Cincinnati & Suburban Bell Telephone Co.) and the 150 independent companies can continue providing Ohio with the best service in the world."

Following Mr. Greene's address, reports of various association committees were presented by their chairmen as follows:

Auditing Committee by Ames N. Nelson of Chillicothe. Public Relations Committee by Paul H. Kaufman of Bellevue. Traffic Committee by George W. Quatman, Jr. of Lima. Commercial Committee by Robert Bonnar of Ashtabula. Plant Committee by F. H. Pratt of Marion.

On the morning of the first day of the convention three conferences were held—Commercial, Plant-Equipment and Traffic.

The program of the Commercial Conference, presided over by Robert Bonnar of Ashtabula, opened with the presentation of a skit by two employes

Ankoseal®

—the original plastic telephone cable

Announces

3 BIG NEW ADVANCES WITH

Ankofoam®

TYPE 775-PF

cellular polyethylene insulated telephone cable

1. Full Color Coding
2. Lighter Weight
3. Smaller Diameter

Available fully color coded in sizes

11 pair to 51 pair

19, 22, 24 gauge

Standard color coded in sizes

76 to 909 pair

22 and 24 gauge

Color Coding provides readily identified pairs. It eliminates the need to ring out or probe for pairs thus saving manpower in cutting in terminals and loading coils. Terminal count changes are made easier and maintenance costs are reduced. Now you can have all these advantages with ANKOSEAL-ANKOFOAM Type 775-PF Telephone Cable.

ANKOSEAL CABLE is sold to independent telephone companies through authorized Telephone Supply Distributors only.

Lighter weight and smaller diameter result from cellular polyethylene insulation. This means less ice and wind load plus reduced cable weight permitting less sag or longer spans.

ANKOFOAM Type 775-PF is a worthy companion to time-tested standard ANKOSEAL Type 775-P Telephone Exchange Cable. The availability of both types means you may choose the cable that is best suited to a particular application.

THE ANSONIA WIRE & CABLE COMPANY

ANSONIA, CONNECTICUT Phone REGENT 4-3306

XUM

LEFT PHOTO: RALPH F. MATEER (center) of Warren, who was elected president of the Ohio association. He is shown receiving congratulations from JAMES I. HUNT (left) second vice president and RICHARD R. WALTZ, retiring president. RIGHT PHOTO: Left to Right, C. E. WILLIAMS of Marion; GEORGE C. McCONNAUGHEY, member of the FCC, Washington, D. C.; J. WARREN SAFFORD of Troy, and YETTER SNYDER of Chardon.

of General Telephone Co. of Ohio—Mary Alice Downes and Marlene Gamble. The skit emphasized the proper technique to be used in contacts with customers and applicants.

E. P. Thompson of Portsmouth, Ohio Consolidated Telephone Co., gave an illustrated lecture on microfilming and its value in the commercial operation of a telephone company.

Weldon Case of Hudson, president of the Western Reserve Telephone Co., presented a lecture-demonstration on subscriber toll dialing, and its effect on present commercial practices.

The featured speaker for the session was Norman Treadon of Cleveland, advertising supervisor for Ohio Bell Telephone Co. His subject was "Selling Potatoes."

"If we don't sell telephone service, we won't be eating potatoes very much longer." With this keynote statement, Mr. Treadon showed how the same principles that enabled the potato industry to merchandise and prepare its products more than 600 different ways for ultimate sale to the public, also apply to the telephone industry.

Dressed as a pontifical professor he first lectured his audience on the necessity of maintaining personal contacts in an ever-growing, mechanized industry.

Then throwing his audience off balance, he and his assistant switched to chef's caps and barbeque aprons and proceeded to sell potatoes.

He showed more than 30 ways of selling potatoes and then proved the same methods of packaging, convenience and display applied to the telephone industry.

Telephone service starts with a pair of wires. Potato products start with a seed. The principles of merchandising each are the same.

Where the telephone industry has public utility regulations, the potato industry has competition from the macaroni and rice industries.

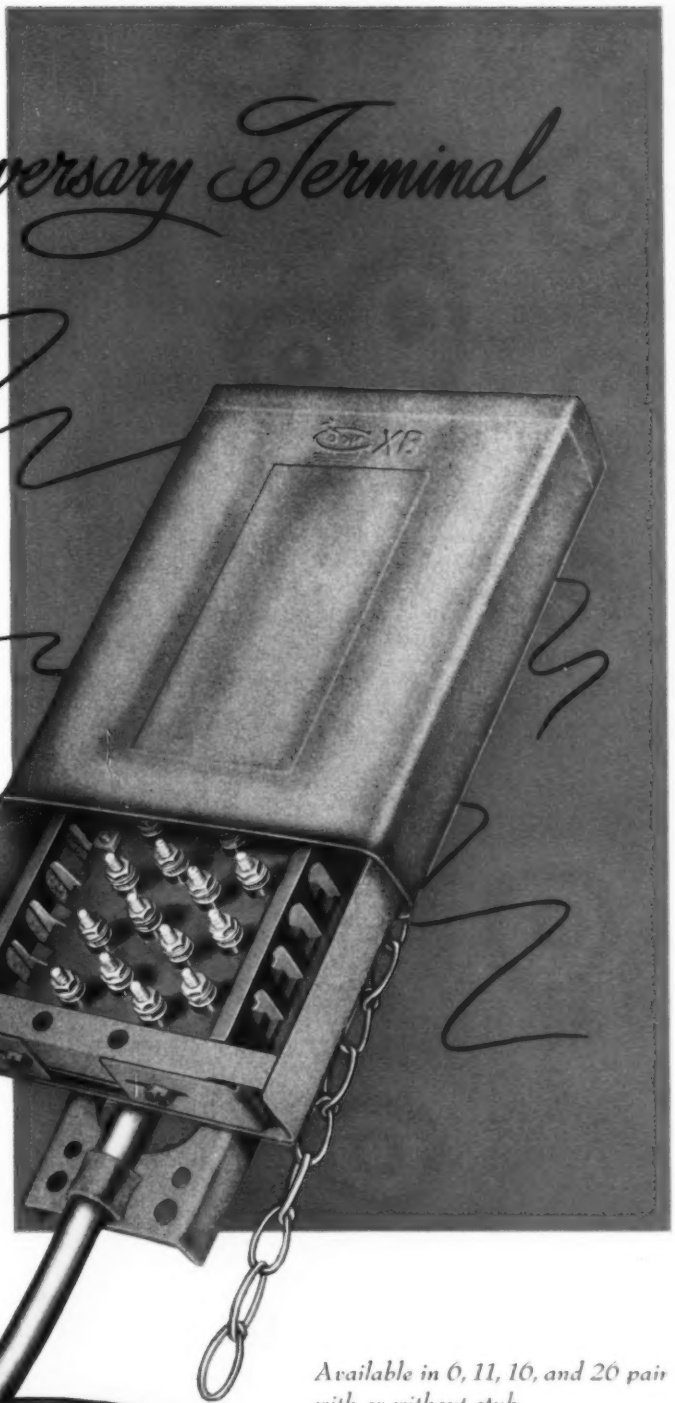
In the Plant-Equipment Conference presided over by F. H. Pratt of Marion, general plant manager of the General Telephone Co. of Ohio, the opening address by W. H. Adams, safety consultant of Granville, Ohio, pointed out that the answer to his title question, "Is Your Slip Showing," must be an embarrassed affirmative if a company's "waste-line" caused by accidents is too big. Pointing out that the communications industries have the lowest frequency of employe injuries among 40 major industries, the safety consultant went on to emphasize that, since people are the common denominator of both accidents and safety, any condition that adversely affects people will undo a company's safety record. Proper selection, training, and placement of employes plus a vigorous and never-end-

(Please turn to page 88)

LEFT PHOTO: Winners of the Ohio Association's Community Service Awards. Left to right, ROBERT P. KAUFMAN, vice president of the Continental Telephone Co.; RICHARD N. COLE, president of the Ohio Consolidated Telephone Co., Portsmouth; MARVIN A. BYRD, general manager of the Mansfield Telephone Co.; RICHARD S. ZACHMAN, supervisor of public information of the General Telephone Co., Marion; H. E. HAGEMAN, president of the Lorain Telephone Co.; RALPH J. WITTER, secretary of The Old Fort Mutual Co., and CARL DEPINET, president of the Bascom Mutual Telephone Co. RIGHT PHOTO: left to right, W. C. HENRY of Bellevue; E. J. KENEALY, member of the Ohio Public Utilities Commission; H. E. HAGEMAN of Lorain; RALPH A. WINTER, member of the Ohio Public Utilities Commission, and C. E. WILLIAMS, of Marion.

XUM

The Silver Anniversary Terminal



News of the introduction of the Cook XB Cable Terminal twenty-five years ago may have been overshadowed by the vivid descriptions of the world series victory of Connie Mack's Philadelphia Athletics...reports of Herbert Hoover's presidential activities...and headlines telling of the first Paris to New York nonstop flight. But, today this Silver Anniversary Terminal stands out as a truly important improvement in telephone distribution systems. Although some minor improvements have been made since the first models were installed a quarter-century ago, the basic design has never been equalled for excellence of service as attested through universal acceptance by the telephone industry in the United States, and throughout the world.

Available in 6, 11, 16, and 26 pair with or without stub

COOK ELECTRIC Company

Since 1897

2700 SOUTHPORT AVENUE CHICAGO 14, ILLINOIS

XUM

Mobile Radio-Telephone Fills Service Gap When Excavation Cuts Cable

WHEN AN INDEPENDENT contractor carrying out trenching operations in southwest Denver, Colo., accidentally cut the underground telephone cable supplying some 900 homes in the area, the Mountain States Telephone & Telegraph Co. was equal to the emergency.

As complaining calls came in, J. D. Gillespie, Colorado plant manager, quickly made up a street map of the area, marking off four routes which could be covered by a slow-moving vehicle in 15 minutes. At the same time, all metropolitan radio stations with maximum listnership in the area were commissioned to send out an emergency notice to telephone subscribers whose service had been eliminated. Each was invited to make use of the telephone company's mobile radio-telephone equipped cars during the length of the emergency, merely by snapping on a porch light to indicate desire for such service or hailing the driver of the car from the front porch or sidewalk.

A Denver woman makes long distance call from a mobile radio-telephone car while driver looks on.

Meanwhile, four drivers, two from the commercial sales department and two from the plant personnel staff were hastily pressed into service. Four general mobile cars were requisitioned for the period of emergency and were kept slowly patroling the area, moving from 10 to 15 miles per hour, immediately beginning the circuit again, after completion of the first.

The program worked out to everyone's satisfaction, with ideal results all the way around, according to Mr. Gillespie. Although it was first anticipated that 1,200 telephones would be out of service, actually only 900 were thus cut off and from among this number there were only some 40 calls made by radio-telephone. "No one took advantage of the company in any way," it was quoted, "during the entire period, there were only two calls of any emergency nature whatsoever, and these were swiftly handled, to the customer's complete satisfaction."

The drivers stayed on the job until shortly after 6 a.m. the following morning when the last wire check proved that every telephone was in service.

As the first such intance in the Mountain States Company's systems history the emergency laid the ground work for more elaborate plans for similar situations in the future. Among steps which have been taken for safe guarding against similar events in the future was the filming of a six-minute television "spot announcement" which can be swiftly relayed by Denver's four television stations, to reassure the public and to inform them of the availability of the radio-telephone cars.

The television spots will eventually amplify the radio coverage already used, according to Mr. Gillespie. Likewise, in future such operations, "stationary cars will be used" parked in the center of the district, with locations announced by radio and television, the patron simply jumping into the family automobile and driving to the spot rather than waiting for the mobile radio-telephone equipped to pass her location.

V V

General of SE Sells $1,300,000 First Mortgage Bonds, Series E

General Telephone Co. of the Southeast, Bluefield, W. Va., on Apr. 12 sold at par $1,300,000 principal amount first mortgage bonds, Series E, 3½ per cent, due 1985. The bonds were taken by three institutions.

Additional financing included the sale of one million dollars of General Telephone Co. of the Southeast's common stock to General Telephone Corp.

The funds secured from these transactions will be used to retire $291,000 of General Telephone Company of the Southeast's first mortgage sinking fund bonds, Series D, 4 per cent, due Feb. 1, 1977, to repay short term bank loans of one million dollars and to retire $700,000 in notes of General Telephone Corporation. The balance will be used for 1955 construction and expansion.

General Telephone Company of the Southeast furnishes telephone service to more than 27,000 telephones in Virginia and West Virginia.

V V

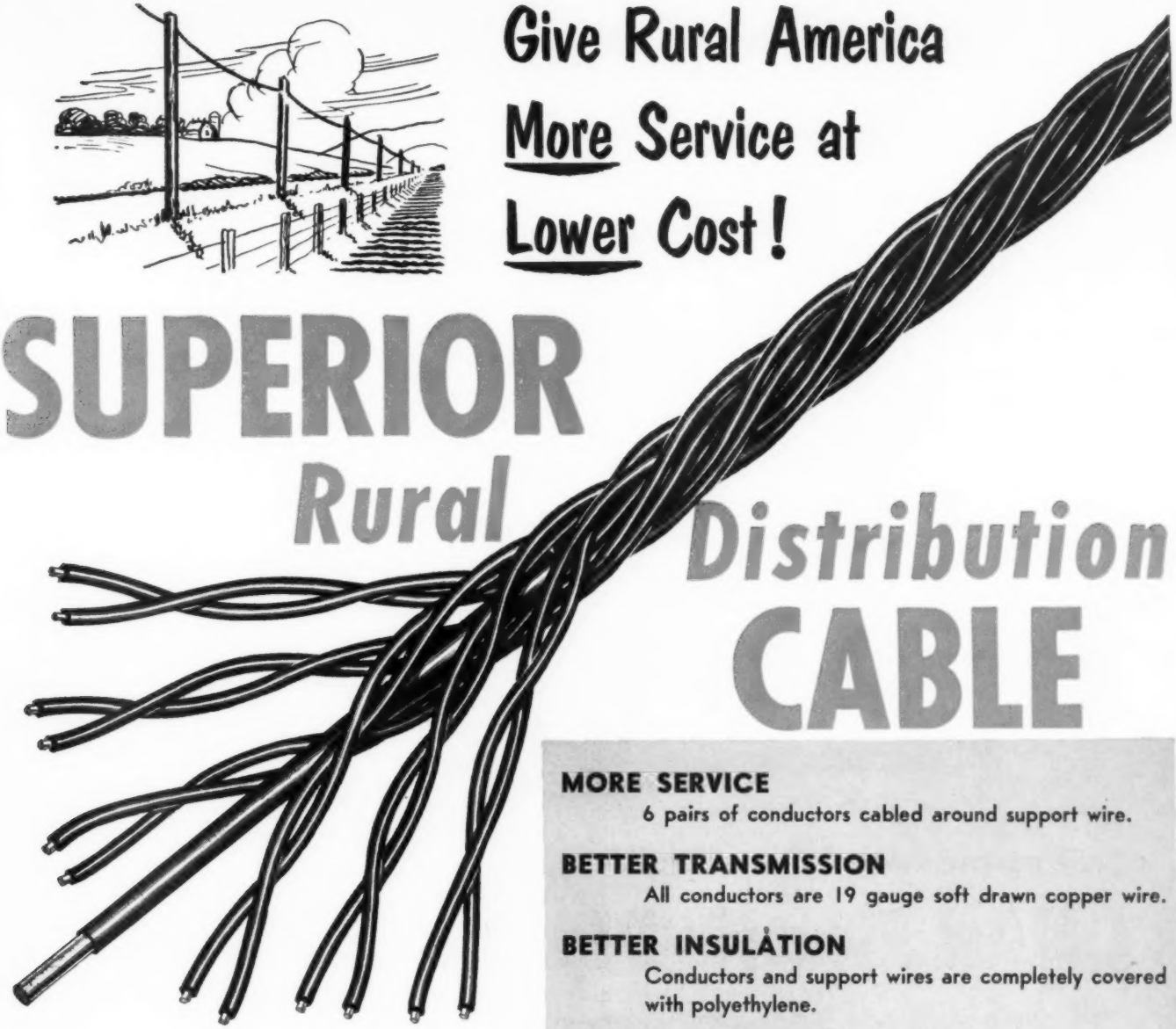
"Already, the proponents of public ownership are giving plain indications of the battle they intend to wage against what they call monopolies and selfish private interests. It is up to us to prove that—in the public utilities field at least—what some call monopolies are, instead, public service organizations . . . and what they call 'selfish private interests' are, actually, efficiently managed and efficiently operated business organizations which have contributed more to the American way of life than all the bureaucrats who have tramped through the public troughs since the Constitutional Convention."—DUNLAP D. SMALLEY, *president, Pacific Coast Electrical Association.*

V V

"Though reading and conversation may furnish us with many ideas of men and things, yet it is our own meditation must form our judgment."—DR. I. WATTS.

Give Rural America More Service at Lower Cost!

SUPERIOR Rural Distribution CABLE



MORE SERVICE
6 pairs of conductors cabled around support wire.

BETTER TRANSMISSION
All conductors are 19 gauge soft drawn copper wire.

BETTER INSULATION
Conductors and support wires are completely covered with polyethylene.

SIMPLER SPLICING
Every circuit easily accessible. Conductors have double raised ridge or color-coded tracers. New stations readily added.

LONGER SPANS
Extra high strength (1800 lbs.) galvanized steel support wire to withstand rough weather. Makes longer spans possible.

LOWER COST
Low initial cost . . . rapid and inexpensive installation.

Use SUPERIOR Rural Distribution CABLE to add new circuits to existing pole lines or to construct new installations—no crossarms are required. Minimum tree-trimming.

Use SUPERIOR for branches off of existing main lines of open wire and cable.

Use SUPERIOR to parallel existing runs of small cables.

Give Rural America More Service at Lower Cost...

use SUPERIOR Rural Distribution CABLE

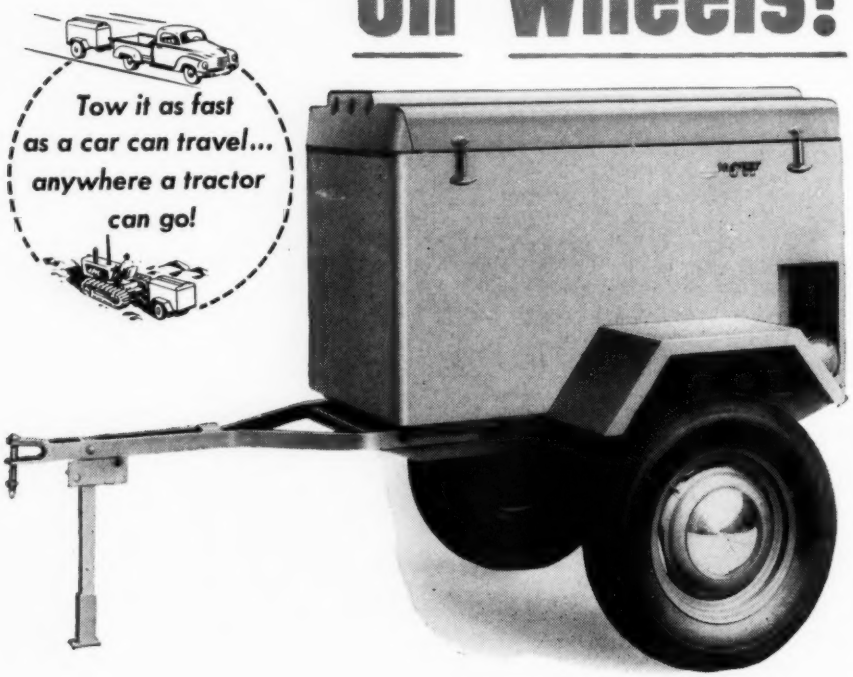
Available NOW—write, wire or phone

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION · HICKORY, NORTH CAROLINA

XUM

NEW Powerhouse on wheels!



Trailer-mounted 5 or 10KW

ONAN Electric Plant!

More plug-in power for construction work . . . higher mobility for emergency standby applications! On construction jobs where high-line power is not available, the Onan "CW" gives you abundant power for all your electric tools, equipment and lights. Now you can use one unit (in place of several smaller portable plants) reducing servicing time and maintenance costs.

Onan "CW" Electric Plants are unusually compact, quiet-running and economical to operate: weigh only half as much as water-cooled plants of the same capacity. Powered by Onan two-cylinder, suction-air-cooled gasoline engines built with massive, long-wearing parts for continuous, heavy-duty service. Fully-protected by heavy-gauge steel housing; stay on the job in any weather.

Wide range of accessories make the "CW" more versatile

You can equip your "CW" Electric Plants for any type of portable service with a wide range of accessories including skid, battery rack, 9-gallon fuel tank, weather-proof housing, two-wheel trailer, or 4-wheel, rubber-tired dolly. *Put one of these portable, high-capacity units on your job now!*

Onan builds electric plants for every need—400 to 50,000 watts

Write for folder A-362

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

3497 University Ave. S. E. • Minneapolis 14, Minnesota

Courts and Commissions

FCC Examiner Rules Against Tomball Purchase By Bell

A hearing examiner of the Federal Communications Commission (FCC) has ruled that Southwestern Bell Telephone Co. should not be allowed to buy an Independent telephone company property at Tomball, Tex., a Houston suburb.

The decision, which becomes final unless altered or reversed by the commission, denied the application of the Bell company for a certificate to purchase, at $200,000, properties of the Tomball Telephone Co. for which the estimated net investment had been $96,900 (TELEPHONY, Apr. 16, p. 36; Feb. 26, p. 50). It declared that the petitioner (Southwestern Bell) failed to prove that the granting of the certificate was in the public interest. This it was required to do, the opinion stated, because such a certificate provides exemption from anti-trust laws.

During the course of the proceedings, United States Independent Telephone Association and Texas Telephone Association, as intervenors, suggested that FCC approval of any such Bell company acquisition would promote monopoly as long as it could be shown that other Independent telephone companies were interested in buying the properties and willing to make the necessary service improvements.

The tentative opinion did not rule on this question, but it pointed out that there was no showing of inability on the part of the Tomball company to make such improvements itself. It found that the alleged advantages of the purchase to the Tomball subscribers in the form of improved service were speculative and contingent.

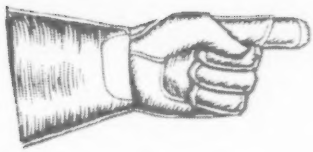
V V

Georgia Commission Approves Financing Applications

Georgia Public Service Commission recently approved the following financing measures:

Southeastern Telephone Company was authorized to sell $500,000 principal amount of its first mortgage sinking fund bonds, series F, 3.5 per cent dated Jan. 1, 1955, due Jan. 1, 1980, under the provisions of the original indenture as amended by the first, second, third, fourth and fifth supplemental indenture, at not less than 100.41 per cent of the principal amount thereof, plus accrued interest to date of delivery.

(Please turn to page 70)

Automatic's  pointers for plantmen and managers

Offer "telephone answering service" with the Electronic Secretary

Businessmen in "one-man" offices—such as realtors, doctors, lawyers, radio and television repair men—will appreciate your suggestion that they install an Electronic Secretary. They *need* "someone" to answer the telephone when they're out of the office!

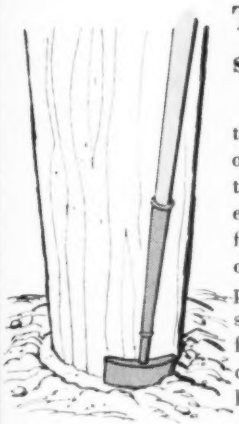
The Electronic Secretary fills this need by receiving incoming calls, and transmitting to each caller a recorded message. A smooth, pleasant voice announces that "Mr. Jones is out," that he'll be back shortly, or tells where he can be reached. It invites the calling party to leave a message, which is then faithfully recorded on wire. When Mr. Jones returns, he can learn the nature of the call by simply playing back the message.

Such a service increases the value of the telephone to your business subscribers, and boosts your revenue. Call your Automatic Electric representative today for full particulars.

A pound of prevention is worth tons of regret!

C-O-Two fire extinguishers contain precious pounds of fire-killing carbon dioxide. This penetrating gas puts out a fire before it has a chance to turn valuable equipment into ashes. The moment the carbon dioxide is released from the tank, it pushes the air aside and quickly encircles the flames. The fire, gasping for air, dies instantly. C-O-Two is harmless to equipment, gives all-around protection. Whether you prefer the lighter, 5-pound units for operators' use or the larger cylinders, make sure you have enough C-O-Two's in your offices and plants.

Cat. No.	Capacity	Each
S-4153	5 pounds	$36.50
S-4154	10 pounds	57.50
S-4155	15 pounds	65.00



The curve of this bar speeds tamping

A simple but important design makes the Dicke curved-head tamping bar one of the handiest tools for tamping dirt around the pole. Crescent-shaped, it slides down easily, packing the earth right up to the pole; fits in narrow machined-drilled holes where other bars might bind. Curved head permits a longer, 7x1⅛ inch tamping surface—packs the dirt down faster with fewer strokes. Be prepared for pole-line construction; order curved-head tamping bars from Automatic Electric today.

Cat. No.	Length of Handle	Each
S-2349	8 feet	$10.85
S-2350	10 feet	12.55

Prices are F.O.B. Chicago and subject to change without notice.

Buy Automatic's *Approved* Supplies

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
1033 West Van Buren Street, Chicago 7, U.S.A.

XUM

The Southeastern company's authority also provided that $250,000 of the total principal amount of bonds authorized be sold to The Connecticut Mutual Life Insurance Co., and $250,000 of the principal amount authorized be sold to the Equitable Life Assurance Society of the United States.

The Ellijay Telephone Co. was given authority to amend its securities provisions such as to issue 320 shares of $50 per share par value preferred stock with a dividend rate of 6 per cent, in lieu of the 5 per cent dividend rate originally authorized (TELEPHONY, Oct. 30, 1954, p. 35).

V V

S. C. Independent to Initiate Extended Area Service on Trial

The South Carolina Public Service Commission has granted permission to West Carolina Rural Telephone Co-op., Inc., to implement on a trial basis extended area service between its Starr and Iva exchanges and Southern Bell Telephone & Telegraph Co.'s exchange at Anderson and between its Due West exchange and Southern Bell's exchange at Honea Path.

Effective date for the extended service has not been set.

Extended service between the exchanges was authorized on a trial basis without any increase of rates.

The cooperative in its petition to the commission said it desired to implement the service on a trial basis without increase of rates.

It asked that subscribers of the Starr, Iva and Due West exchanges pay the present rates as fixed by the commission, with the understanding that at the end of the trial period, should revenues prove to be insufficient to meet all operating expenses and debt service, then the extended area service will be discontinued until a new rate schedule for the subscribers, sufficient to cover the lost revenue, is approved by the commission and put into effect.

V V

Nebraska Independent Asks Rate Raise on All Service

The Keystone-Arthur Telephone Co., Keystone, has asked the Nebraska State Railway Commission for an increase of $1.00 per month on all classes of service, and the commission set Apr. 21 as the date for an informal hearing.

Originally the company asked for 50 cents per month but this was protested by customers of the company. Later an agreement was reached between customers and the company whereby the rates would be increased $1.00 per month, provided the company would improve service through the installation of a new switchboard and the addition of operators.

V V

Nebraska Independent Files Incorporation Papers

A notice of incorporation was filed on Mar. 24 by the South Albany Telephone Co., Atlanta, Neb.

The new non-profit company has already installed about 15 miles of new line in the area.

The business affairs are in the hands of an elected board of directors. Present officers of the board are: Ora I. Carter, president; Virgil D. Peterson, vice president; and Merton Goings, secretary-treasurer.

V V

Minnesota Party Line Bill Goes To Governor for Signature

A bill given final passage by the Minnesota Legislature on Apr. 7 and sent to the governor for signature would make it a gross misdemeanor to refuse to yield a party telephone line in an emergency.

The bill also would make it a misdemeanor to say "emergency" falsely.

V V

To Buy Minnesota Independent

On Apr. 11 the Minnesota Railroad & Warehouse Commission authorized sale of the Hammond Telephone Exchange to G. M. Dwelle.

V V

Ask Sale Approval in Missouri

The Missouri Public Service Commission on Apr. 14 received application of Clyde E. and Ruth I. Raps to sell and the K. L. M. Telephone Co., Rich Hill, to purchase the telephone property at Papinsville.

V V

Correction

The correct amount that the Eastern Rowan Telephone Co., Granite Quarry, N. C., will be mortgaged to the REA, when the company has accepted newly-allocated funds, is *96.5 per cent*, according to W. S. Beddingfield, Mount Airy, N. C., district manager of the Central Telephone Co. TELEPHONY had shown the amount of indebtedness incorrectly as 16.5 per cent, in our issue of Apr. 2, page 30. Mention of the extent of the Eastern Rowan company borrowing from REA was in connection with the company's securing approval from North Carolina Utilities Commission of an additional loan of $325,000 from REA.

This announcement is neither an offer to sell nor a solicitation of an offer to buy any of these Shares. The offer is made only by the Prospectus.

158,203 Shares

Peninsular Telephone Company

Common Stock

(without par value)

The Company is offering to the holders of its outstanding Common Stock and to certain of its officers and employees the right to subscribe for these shares, as more fully set forth in the Prospectus. The Subscription offer will expire at 3:30 P. M., Eastern Daylight Saving Time, on May 2, 1955.

Subscription Price $36 a Share

The several underwriters may offer shares of Common Stock at prices not less than the Subscription Price set forth above (less, in the case of sales to dealers, the concession allowed to dealers) and not more than either the last sale or current offering price on the New York Stock Exchange, whichever is greater, plus an amount equal to the applicable New York Stock Exchange Commission.

Copies of the Prospectus may be obtained from only such of the undersigned as may legally offer these Shares in compliance with the securities laws of the respective States.

MORGAN STANLEY & CO. ***COGGESHALL & HICKS***

G. H. WALKER & CO. ***MERRILL LYNCH, PIERCE, FENNER & BEANE***

A. M. KIDDER & CO. ***GOODBODY & CO.*** ***FRANCIS I. duPONT & CO.***

April 18, 1955.

Use REX
Rural Distribution Cable

MAXIMUM EFFICIENCY AT MINIMUM INITIAL COST.

- **AVAILABLE WITH 6 OR 16 PAIRS**
- **COMPLETELY COLOR CODED**
- **SELF SUPPORTING**
- **HIGHEST POSSIBLE QUALITY**

Rex Rural Distribution Cable is unequalled for quality, performance, transmission and strength. The conductors are #19 solid, bare, soft drawn copper — polyethylene insulated and individually vinyl jacketed. They are completely color coded. Conductors are cabled around an insulated, galvanized steel messenger cable which has tremendously high strength to withstand severest weather conditions and permit longer than usual runs.

Available with 6 pairs — No. RDC-0619-U, or, 16 pairs — No. RDC-1619-U.

Before you invest in Rural Distribution Cable get the complete story about Rex RD cable — it is unquestionably your very best buy.

Write for complete technical data and samples.

MANUFACTURERS OF PLASTIC INSULATED TELEPHONE, COMMERCIAL AND MILITARY WIRES AND CABLES

The REX CORPORATION

100 HAYWARD RD., WEST ACTON, MASS., U.S.A.
Telephone: Colonial 3-7721

XUM

Just picture what the telephone means...

That's exactly what the advertisement across the page does. It reminds millions of readers of April magazines of facts that are already familiar to America's telephone companies. These facts concern telephone usefulness and helpfulness. They are brought home vividly to telephone users in every area served by America's more than 5000 telephone companies.

Telephone Diary

HOUSEWIFE TELLS HOW FAMILY'S TELEPHONES SAVE STEPS, TIME AND WORRY—DAY AND NIGHT

4 A. M. Jack's a sound sleeper but he woke up fast when he heard the news. "It's a boy!" he shouted. "Nearly eight pounds. Mary's fine." Then I talked and Jack talked. Bless that bedroom telephone!

8 A. M. to 11 A. M. Just couldn't wait to tell Betty and Peggy about the baby. Then I ordered Jack's favorite roast for dinner and was lucky to get a hairdresser appointment. A grandmother must keep young!

5 P. M. Wouldn't you know! The very night I have something special for dinner Jack gets held up at the office. But it wasn't too bad. He telephoned he'd be an hour late. It's wonderful to have a telephone in the kitchen.

10 P. M. Such excitement! First Jack Jr.'s baby. Then Alice tells us she's engaged. I wasn't too surprised because of all those telephone calls and dates. I'm so glad it's that nice Bob Johnson.

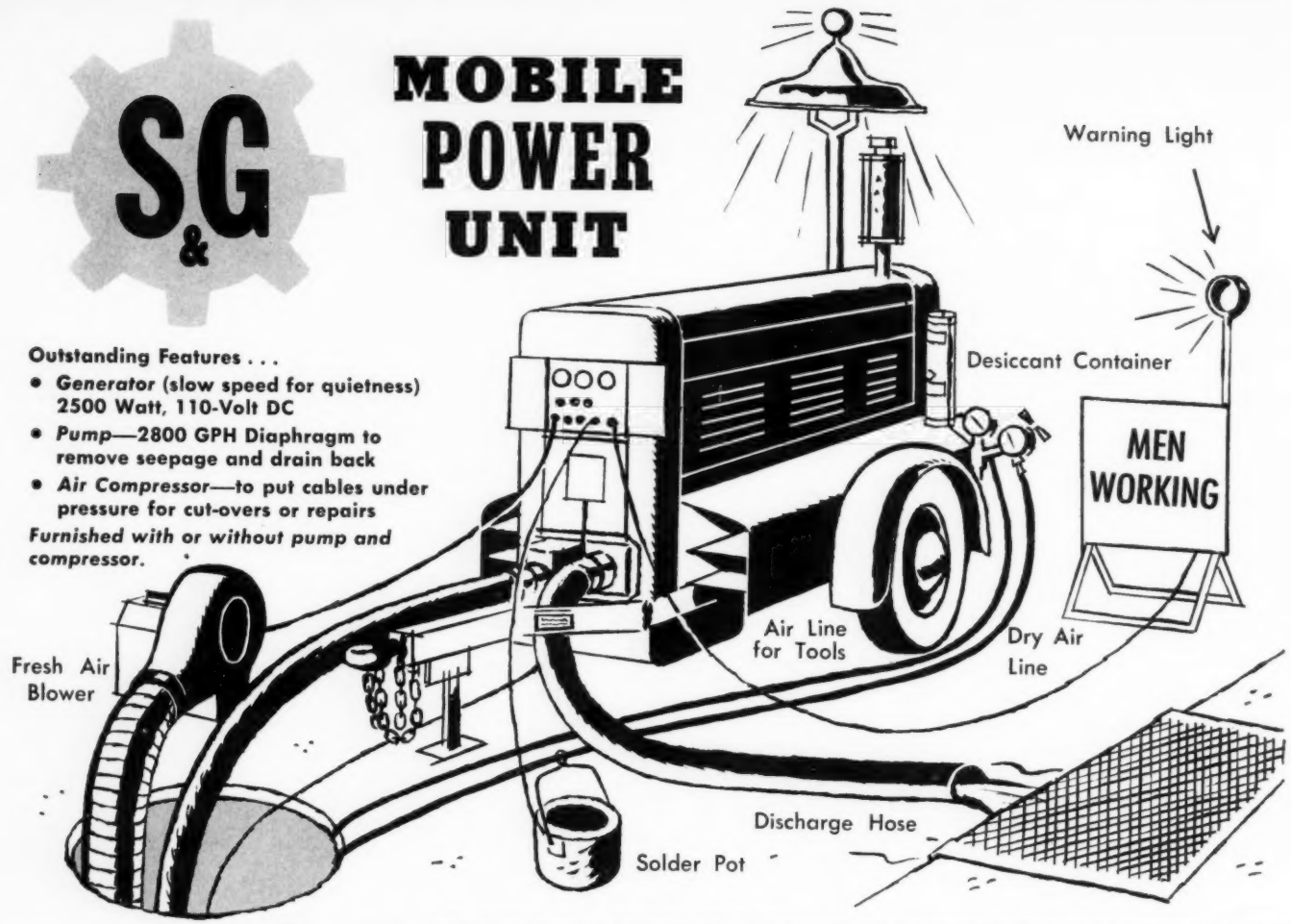
EVER READY...EVER HELPFUL. Day or night, rain or shine, the telephone stands ready to help you in the everyday affairs of life as well as emergencies. In office and home, these oft-repeated words reveal its value—"I don't know what I'd do without the telephone."

BELL TELEPHONE SYSTEM

XUM

S&G

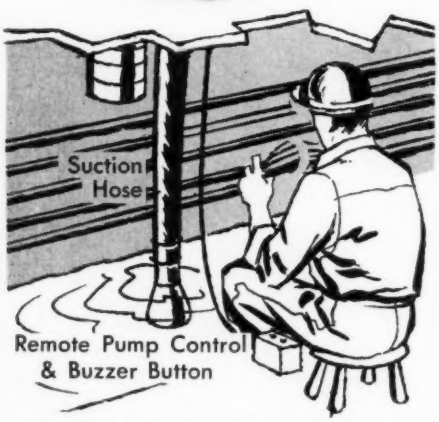
MOBILE POWER UNIT



Outstanding Features . . .

- ***Generator*** **(slow speed for quietness) 2500 Watt, 110-Volt DC**
- ***Pump*****—2800 GPH Diaphragm to remove seepage and drain back**
- ***Air Compressor*****—to put cables under pressure for cut-overs or repairs**

Furnished with or without pump and compressor.



- 300-Watt floodlight illuminates working area
- operates soldering pot and iron, electric and air tools
- electric blower to ventilate manhole
- supplies dry air for cable cut-overs, flash testing, etc.
- self-priming pump can be operated from manhole by push button control
- buzzer signal for summoning helper
- light, easy to handle

write or phone

S&G MANUFACTURING CORPORATION

P. O. Box 1309 • New Orleans 10, La.
RAymond 3142

AT&T Files for $27,000,000 Expansion of Facilities

Authority to construct new telephone facilities costing about 27 million dollars was sought on Apr. 13 by the Long Lines Department of American Telephone & Telegraph Co. and six associated companies in a filing with the Federal Communications Commission. A previous application covering a 10 million dollar portion of the same construction program was filed with the commission on Nov. 1, 1954, and approved Dec. 30, 1954.

The application covers installation of new equipment to meet a considerable increase in telephone message traffic. The proposed construction would include facilities to provide about 2,000 additional long distance circuits and equipment for additional private line telegraph circuits.

A Long Lines announcement said the application also outlines plans for converting the Dallas-Los Angeles coaxial cable to a newer type transmission system called "L 3 Carrier." Conversion of the Dallas-Los Angeles route would make available about 1,200 additional telephone circuits and two additional television channels.

The Bell companies participating in the program are: Illinois Bell Telephone Co., Mountain States T&T Co., Northwestern Bell Telephone Co., Pacific T&T Co., Southwestern Bell Telephone Co. and Wisconsin Telephone Co.

V V

Lenkurt Electric Co. Adds A. E. Carlson to Board

Telephone Executive A. E. Carlson was added to the board of directors of Lenkurt Electric Co. at the annual meeting of stockholders at the Lenkurt headquarters plant in San Carlos, Cal.

Mr. Carlson is executive vice president of Theodore Gary & Co., which controls the largest group of manufacturing companies and the second largest group of operating companies in the Independent telephone field.

He is president of the Associated Telephone & Telegraph Co. and also is an officer and director of other companies.

Lenkurt officers re-elected to the board of directors are Lennart G. Erickson, president; Kurt E. Appert, executive vice president; Philips B. Patton, vice president and commercial manager; George F. Koth, vice president and works manager; Kenneth R. Rickey, vice president and controller.

Re-elected also was Martin Lindsay, vice president of the Automatic Electric Co., which is distributor of Lenkurt multi-channel telephone carrier and microwave systems.

BOOK REVIEW

"ELECTRONICS TECHNICIAN 3;" Prepared by Bureau of Naval Personnel. 512 pages; for sale by Supt. of Documents, Washington 25, D. C.; price $2.00; Cat. No. D 208.11E1 2/5/954. Reviewed by Harold McKay.

This paper bound book deserves better covers. It is a reprint of a volume originally issued in 1952. The new edition contains minor revisions. Designed to assist naval personnel to qualify for the rating of ET 3, the volume admittedly uses self-teaching methods. Because of this the approach is somewhat different from that usually found in texts on electrical fundamentals.

The first few pages plunge at once into the different types of radar and loran and other electronic navigational gear with which the technician would have to work. None of this gear is really explained from an electrical viewpoint in these pages, so this part will probably be disregarded by most readers.

For a telephone man, or anyone outside of the Navy, the book really begins with chapter two. Here the fundamentals of electricity are given in the manner taught in most schools. Enough basic physics is given to give the reader an idea of the structure of the atom, and where the electron fits in. The book recognizes that there are different concepts about the way electricity behaves. For instance, as part of electronic theory, electrons are shown to move from negative to positive. It is then mentioned that the conventional idea is that current moves from positive to negative. It then adds that whenever current flow is mentioned in the Navy it means electron flow—that is, negative to positive. Thus a certain recognition is given to "the Navy way."

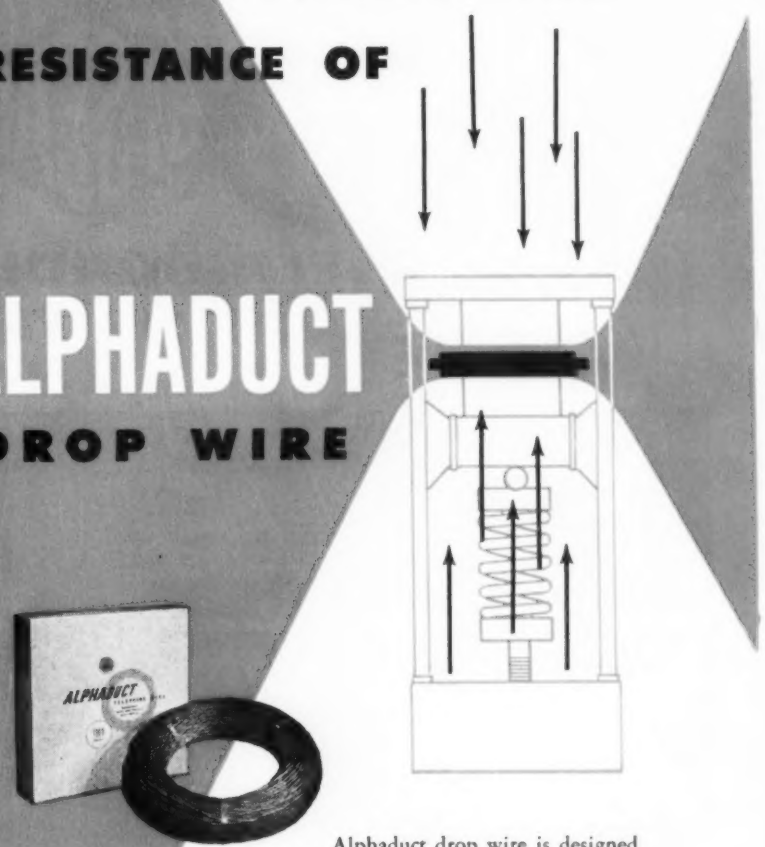
The second chapter of the book is really a complete course in basic electricity compressed into about 50 pages. In addition to the facts about electrons, the chapter tersely covers conductors, resistors, inductors, capacitors, and even the basic principle of the vacuum tube. The text then swiftly moves into simple applications of these circuit components, and demonstrates Ohm's law and Kirchoff's laws with simple series and parallel diagrams. A basic tube circuit is included, and the method of use and hook-up of voltmeters, ohmmeters and other test instruments are shown.

Brief treatment is given the methods of generating electricity, and to batteries, generators, photocells, crystals and thermocouples. A short course in

1500 pounds

MINIMUM COMPRESSION RESISTANCE OF

ALPHADUCT DROP WIRE



Alphaduct drop wire is designed and built to be the longest lasting drop wire you've ever installed. It's tested . . . completely, thoroughly and often to make sure that every single coil is up to Alphaduct's rigid standards.

Here's how the insulation is tested to make sure it won't crush.

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1

Single tube compression sleeve joint to be insulated with ¾" BI-SEAL Type No. 2 Tape.

2

Each joint wrapped with a single half-lapped layer tensioned to about three-quarters original width.

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For splicing tape that lasts as long as the original insulation, it's Bishop Bi-Seal self-bonding electrical tape . . . a polyethylene based insulating compound that has no right or wrong side, no tacky surface to pick up foreign matter or stick together during application . . . yet Bi-Seal fuses into a solid mass that creates a tight seal over the splice, insuring against any lateral moisture penetration. Bi-Seal has outstanding elasticity and the ability to conform to the most complex shapes. It remains flexible at temperatures as low as minus 40°C, has excellent ozone and sunlight resistance, and will not deteriorate or deform even after years of storage.

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circuit tracing and wiring diagrams is included.

While the first of the book might be called a "once over lightly," the balance of the text gets down to cases. All of the subjects covered in chapter two are covered again in the subsequent chapters. Whereas the first mention of Ohm's law gave merely the idea of it, the later treatment shows many examples of series and parallel circuits, complete with the arithmetic involved in solving the problems presented. Chapter two gives George Ohm about six lines, but chapter three devotes 20 pages to the subject.

Thus the book has the very welcome quality of gradually leading into its subjects, which makes it much easier to understand. After each subject is expanded in the middle chapters, the practical application is handled in the last part of the book. For instance, inductors and condensers are treated first in chapter two, where little more than definitions and construction details are given. In the middle of the book the complete details of how these units act in a circuit are presented. At this point the methods of vector calculation, which are used to determine the results of reactance and resistance in a circuit, are explored.

Extensive explanation is given to the combination of these units in the makeup of different types of filters. The information includes both wiring diagrams and curves of typical filters.

About the last half of the book is devoted to explanation of just about every type of basic electronic circuit that one could ask for, as may be seen from some of the following chapter headings: Vacuum Tube Principles, Power Supplies, Amplifiers, Oscillators, Transmitters, Detection, Receivers, Propagation of Radio Waves, Cathode Ray Oscilloscope.

Because the book was designed for self-teaching, a series of questions is given at the end of each chapter, so that the reader may check his own progress. A "pony" section is given at the back of the book which contains the answers to these questions.

This appears to be a good book for telephone men who wish to extend their knowledge into the field of vacuum tube repeaters and carrier systems. While these units of telephone plant are not specifically covered, all of the principles involved are explained. The section on audio amplifiers provides the necessary understanding for telephone repeaters. The radio transmitter and receiver, and particularly the filter information would be extremely useful in studying carrier systems.

This should be a good handbook for

anybody who works in the electrical business today, even if he isn't about to strike for the rate of ET3.

V V

Weekends—A Time of Relaxation, Fun—and Highway Accidents

Practically all of us look forward to Friday because to most of us it means that another weekend has arrived. The weekend is a time for pleasure and relaxation. There's that tennis game we had planned, a picnic with the family, and perhaps a golf game with our next door neighbor. It's the time for going to church, fixing things around the house, cleaning out the attic, and watching television.

The weekends are all of those things —except on the highways. In 1954, 13,980 persons were killed and 678,000 were injured in weekend accidents, according to figures compiled and released by The Travelers Insurance Companies. Thirty-nine per cent of the deaths and 35 per cent of the injuries were recorded on Saturdays and Sundays in 1954.

The most dangerous day of the week for driving is Saturday. One good reason is that more cars travel the highways on Saturdays than on any other day. There is another important feature which sets this day apart from the others. For too many people, Saturday night is a time when drinking and driving are combined.

No one knows how many traffic accidents are caused by drinking drivers, but everyone knows it is a major problem.

For example, walk into your traffic courts any day and you will find them crowded with persons who were involved in serious accidents as a result of drinking. Everyone needs to know that even one drink before driving is too many. We saw an advertisement the other day which said: "If You Drive—Don't Drink—If You Drink—Don't Drive." This sounds like very simple advice, but it makes a great deal of sense.

Weekends should indeed be happy ones for everyone. Let's try and make it that way. Will you?

V V

Missouri Independent Plant Superintendent Retires

A. B. Smith has resigned as plant superintendent of the Grand River Mutual Telephone Corp., Princeton, Mo., to return to his home in Lincoln, Neb.

Mr. Smith retired on pension in 1953 from the Lincoln (Neb.) Telephone & Telegraph Co., with a service record of 45 years. He has been with the Grand River Company for two years.

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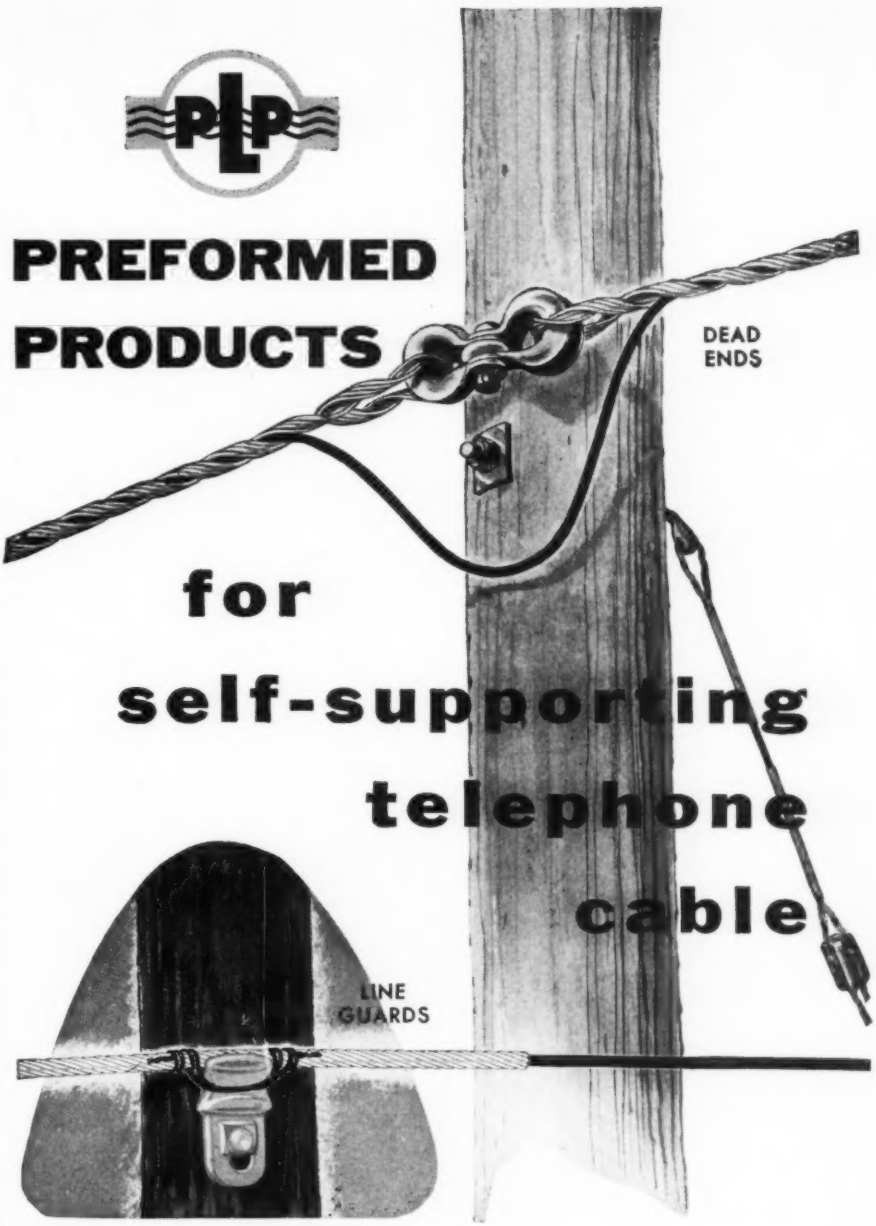

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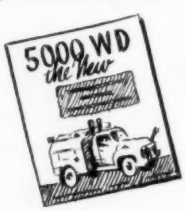
Before you purchase any line equipment, make sure you have thoroughly looked into this modern, up-to-the-minute unit by York-Hoover.



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York-Hoover Corporation
YORK, PENNSYLVANIA
Body Division

RURAL TELEPHONE GROWTH

Continued from page 20

Further reference to base rate boundaries will be made under "Map Codes."

Rural Farm Areas. These areas are of course becoming more and more restricted as the non-farm areas spread outward. Telephone growth in farm areas may be largely dependent upon three factors: (1) General improvement in farming methods, more tillable acreage, etc; (2) the extension of plant facilities into sections where telephone service is not now provided, and (3) the factor, again, of longevity. A condition often repeated in some sections among the more prosperous farms occurs where the original homestead is occupied by the retired farmer and son and/or grandson carry on in new homes in the immediate vicinity. The frequency of this occurrence will have to rest upon the surveyors' judgment.

(4) *Field Survey Maps.* A map showing roads and highways may probably be obtained from the State Highway Department for the county involved. The scale of the maps used should be large enough to show clearly all of the field data required and the density of the present development will determine the scale. The rural non-farm areas may require maps to the scale 1″=1000′, while for the rural farm areas the scale may be 1″=2000′.

(5) *Field Survey Map Code.* Each pole line should have a specific designation and each existing and estimated new establishment should be numbered separately for each pole line. There are, of course, any number of map codes that may be used to indicate the desired information. However, years ago, when extensive field surveys were made, colored crayons were used to designate the various classes of establishments and it is felt that this method cannot be greatly improved upon to readily present the varying nature of probable telephone service. It is also felt that any code that involves no figures or letters is more easily recorded in a car.

A map code such as the following is suggested in *Table II*. The code shown in *Table II* should cover field appraisals of all developments in rural areas as well as for entire small exchanges. There appears to be at least three cases in which part or all of the above code would be required and are as follows:

(1) Entire small exchange serving a few hundred subscriber lines with no existing or proposed base rate area. Individual, party and rural service would be distributed throughout the exchange.

(2) Larger exchanges in which the existing base rate area is satisfactory,

possibly recently adjusted. The field survey area would be as in *Fig 2.*

(3) Larger exchanges in which the existing base rate area requires enlargement or in which a base rate area is to be established.

In the fringe of the non-farm rural area adjacent to the definitely built-up section of the exchange, there are involved two factors to be established, each dependent upon the other, i.e., the appraisal, telephonically, of the establishments based on a base rate boundary and a base rate boundary based on an appraisal as above described.

Under such conditions, certain revisions of the initial attempts will be necessary. In order to revise as few of the appraised telephone services as possible, the surveyors may proceed outward along a given feeder route, assigning base rate classifications until the establishments become definitely scattered, then assume rural service only.

The location of the base rate boundary will become fairly obvious after the locations of all of the establishments have been recorded on the map. It may then be necessary to assign rural service to some other initial classifications, or vice versa, depending upon whether the tentative base rate boundary was too far out or too far in. Suggestions as to the form of base rate boundaries will be outlined under "Base Rate Area Boundary Changes."

The above condition is outlined briefly in *Fig 3.*

(To be continued)

"Reserve is the truest expression of respect towards those who are its objects."—DE QUINCEY.

V V

"Self-respect governs morality: respect for others governs our behaviour."—SEGUR.

Answers to Traffic Questions On Page 60

(1) Make a subsequent attempt 20 minutes from the initial attempt then, as directed by the calling party.

(2) The operator should say, for example, "All right, sir, will you place your call again, please?"

(3) The operator should hold the connection and proceed in the usual way, remaining cut in in all cases.

(4) Yes.

(5) Say, ("Called No.) (Calling place) is calling."

IN THE NATION'S CAPITAL

Continued from page 28

ing, for that is the important responsibility of management.

Regulation Must Keep Pace

One of the temptations of management is to look on regulation as a static thing, as something that is set up by law, and settled by decisions and that's it. The commissions are expected to go on doing business at the same old stand, under the same precedents, with the same amount of help and salaries, year after year.

No management worth its salt would ever consider looking at its own telephone business in that way. Telephone management is compelled to consider its business as a constantly dynamically expanding operation. Doesn't it follow that regulation, if it is going to be worth its salt, has to keep pace?

I know of one public service commission law which has not been changed since 1913. I daresay some of you may know of similar instances. I do not mean by that that we ought

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XUM

to tinker with the regulatory statutes every year. That is just part of the picture. I mean that management, utility management, ought to include in its permanent review of its own business problems some thought for the regulatory authority.

Does the law need changing or bringing up to date? If not, fine. Does the commission need more help or better pay? If not, fine. The main point is that regulation needs a check up now and then just like every other human institution if it is going to continue to work properly.

Now to get to something more fundamental. One of the complaints we hear most about utility regulation from the lips of management is that regulation tends to interfere with, or usurp, the role of management. The expression we most commonly hear, and one which I believe was used by the U. S. Supreme Court over a half-century ago, was that the regulators tended to substitute their judgment for that of management. Admittedly, that is a serious and continuing temptation to the commissioners who have, after all, no financial responsibility to the owners of the property.

But, isn't it a fact that *every* regulatory decision is, to some extent, an interference with management? Isn't that the whole idea of commission regulation—to act as a check, or umpire, at the policy-making level to be sure that the operations are in the over-all public interest?

Interference One of Degree

The mischief arises when regulatory decisions go further than that. In other words, the interference, if we want to call it that, is one of degree. To use an extreme example: If a commission tried to tell a utility company what color to paint its buildings or trucks we would have an obvious and unwarranted interference.

On the other hand, the preservation of reasonable levels of rates, and consequent earnings, of standards of service and safety—these have all been among the prime responsibilities of commission regulation from the very beginning.

It is in the broad area which lies between these extremes where the hard questions and difficult decisions arise. Take, for example, the efforts of regulatory commissions to tell the operating companies to go into more bonded debt and do less equity financing, or to use funds earmarked for taxes or other purposes for working capital requirements.

These are essentially managerial policy questions which go into the fundamental credit standing of the utility corporations. For regulatory commissions, answerable mainly to the political powers appointing them, to say that management should pile up low-cost debt, or cut down cash reserves, just to make a few more revenue dollars available to ease the economic pressure for rate increases, seems to me to be taking on a regulatory responsibility which, in the absence of abuse, should primarily belong to management.

On the other hand, there are situations arising these days which we never expected to arise in bygone years, where public utility managements can themselves become vulnerable to raiding by outside financial promoters simply by reason of the fact that they have permitted attractive reserves to be built up by ultra-conservative dividend policies.

I do not pretend to know to what extent the regulatory authority in the public utility field can or should be used to protect established utility management from being taken over by outside financial interests. But I do know what happened to the transit company in Washington, D. C., and to the New York Central Railroad. I also know what our regulatory commission tried to do about the situation in Washington and found out that it could not.

I simply mentioned these situations as a demonstration of my original point that regulation, like utility management itself, should be considered a dynamic thing—something which never stands still, something which is changing constantly.

Management's Influence Needed

It may well be that the lawmakers will have to develop new and different powers of regulation in the future, compared with the past. And because of these plastic periods, through which we are now passing, management will certainly want to consider far in advance any changes which may be desirable or necessary, as well as those which are *not* desirable or necessary. This much is certain. Changes in the regulatory setup are going to be made from time to time, whether a particular management wants it or not.

The prudent thing, therefore, would seem to be to have management not only keep abreast of developments, but to keep well ahead of them, and to lend its influence for an over-all beneficial improvement in the law and regulatory policies.

As a matter of fact, I think experience will show that it has been a good thing for management that regulation

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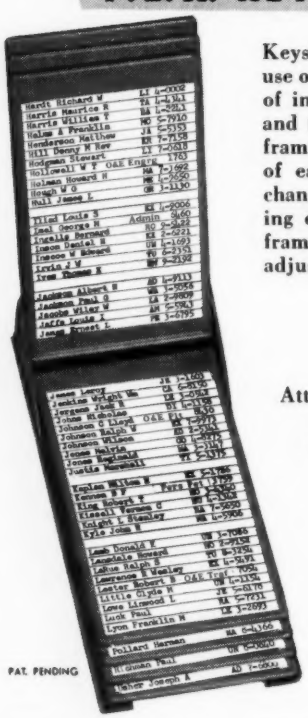

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has been changeable and elastic, avoiding the paralysis of fixed formula. The danger is that it may not always be elastic enough, to bridge satisfactorily the necessary transition from a relatively stable price period to a period of rapid price change or inflation.

It is only human for regulatory commission staffs to seek the non-controversial certainties of following former precedents and routines even to the point of stagnation. So, again, it is important for management to take the initiative, if necessary, to call for a change where the need for change is plainly indicated. You can be sure that the local public paystation telephone rate did not go from a nickel to a dime because regulatory authorities thought of it first.

There are three general points for the improvement of regulation which, I would like to suggest, can be constantly reviewed by management: *First*, getting the best people on the commissions; *second*, getting the best principles adopted by the commissions; and *third*, giving the regulators the best co-operation possible.

Commission Deserves Respect

On the first point, I would like to say right off that I yield to no one in my admiration and respect for the men and women who have served on our regulatory commissions and staffs. When we stop to think of the number of brilliant men who have been attracted to make a career service out of our regulatory boards—some of them experts in their own rights before appointment and some who became real experts through the years—I say utility management as well as the American people will always owe a debt of thanks to these good and faithful servants. I have never ceased to marvel at the great amount of real dedication and ability the taxpayers have been able to obtain for so little spent on utility regulation.

But, we must also realize that the best way to carry on this tradition is to re-examine and improve, if possible, the ways and means whereby regulatory commissioners are selected. Getting good men is more important in this respect than getting good laws.

I believe it was the dean of American regulation, the late Joseph Eastman, who once said that good men on a commission could somehow do a good job under a bad law, but that unqualified men could manage to bungle the best law that was ever written.

It would, of course, be presumptuous for utility management to attempt to seek to have any direct voice in the selection or approval of regulatory

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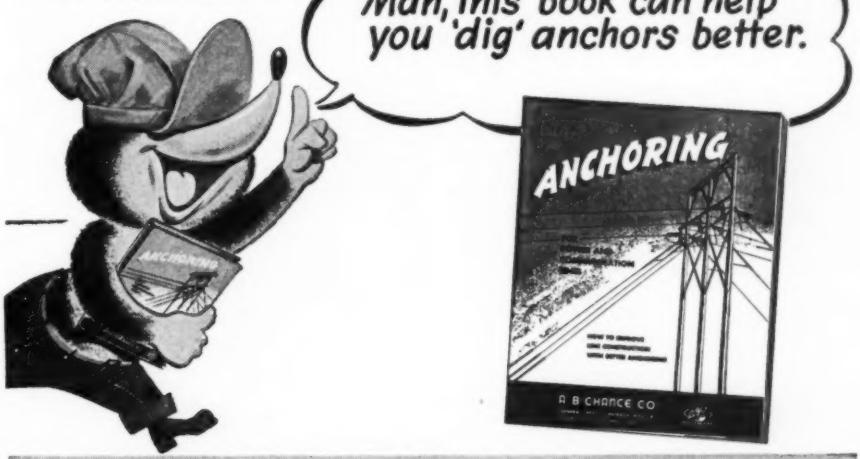

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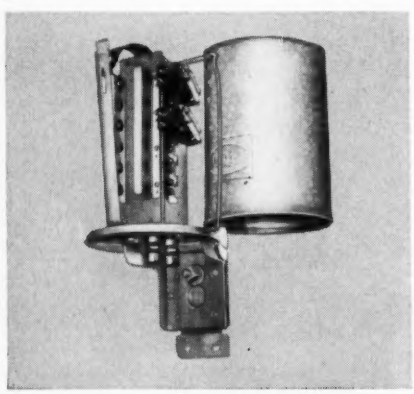

Easy accessibility of this pole cable terminal interior makes it ideal for use with plastic cable.

When only one cable entrance is required, you close the dead entrance with a standard pipe plug. These features, combined with the flexibility of Cook Electric Company's H-20 protector units, make the S-20V protected pole cable terminal probably the most versatile pole cable terminal available.

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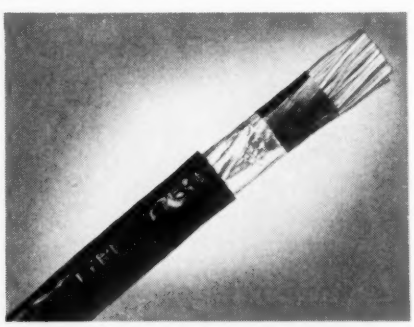
You can cut installation and handling costs, save yourself a lot of time, with Ankoseal lightweight plastic cable.



Polyethylene insulation and special jacket compound of this cable give plenty of protection.

It has polyethylene insulation that gives you excellent moisture resistance and thereby eliminates the hazard of wet cable. Another advantage of polyethylene is its high dielectric strength, which means less lightning trouble.

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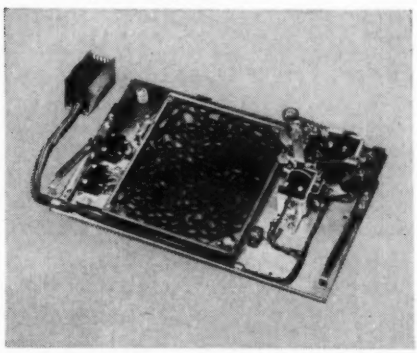

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Wirelink and Wirevise for a good splice or deadend

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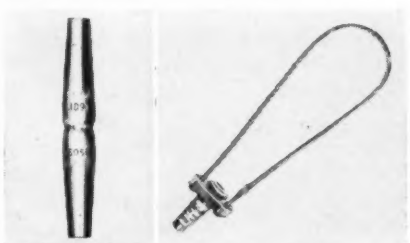

At left, Wirelink gives you a good splice automatically—eliminates fussing and fuming during assembly. At right, Wirevise assembles easily around insulator spools and through thimble eye—for good deadends.

These faster splices are made possible by the Wirelink—an automatic-type splice for .109 steel wire.

Another handy item is Wirevise, the "automatic" deadend. Like the Wirelink, it is especially adapted to .109 extra high strength steel messenger supporting 5- and 6-pair Rural Distribution Cable. Easy to assemble around insulator spools and through thimble eye.

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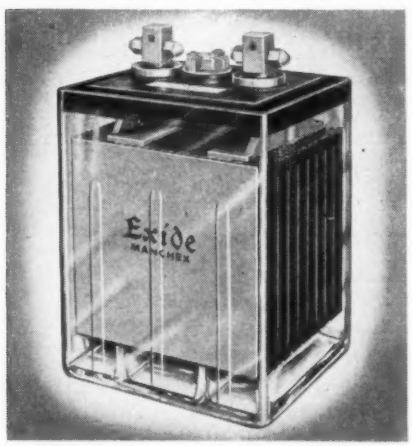

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personnel. But, I think management can expect that the governors and the legislators should observe certain standards of qualification in the selection of commissioners.

First of all, it is not too much for management to expect that no man should be appointed to a regulatory commission unless he believes in regulation as a continuing system to preserve private enterprise in the utility business. Several years ago the Senate refused to confirm the nomination of a member to a federal regulatory commission who showed by his writings and speeches that he did not believe in regulation as a continuing system, that he had always preferred public ownership. And, ever since that time, years later, that same man, following the defeat of his nomination, has scarcely ever made a major public statement or given public testimony which does not look towards public ownership and the liquidation of some part of our private utility economy.

I do not question his sincerity or his right to hold these views. I only say that such a man has no business on a regulatory commission. It is something like making a school superintendent out of someone who does not believe in education, or putting a confirmed prohibitionist at the head of a liquor control board.

Spell Out Standards

Aside from ideology, there are other sorts of prejudices which I think should be barred from regulatory commissions. Not long ago a certain regulatory commissioner defied his own supreme court in refusing to allow clear precedents for a telephone rate increase. He virtually dared the court to reverse him, and a few days later he ran in an unsuccessful primary race for governor.

Several years ago, during the depression, a candidate for the commission in an elective state made a campaign promise that he would reduce utility rates if elected. I could give you other instances of examples of prejudgments which are hard to square with sound principles of unbiased regulation.

All right, how are we going to get qualified commissioners? We cannot do much by trying to spell out statutory standards. We cannot, as a practical matter, draft commissioners from the ranks of utility employment. To my mind there is no easy answer. We must rely on an enlightened appointive power.

It may be possible, however, to work out an arrangement whereby the executive appointive powers may get good advice from bar associations, or specialized regulatory advisory committees, on such appointments, just as so many of our judges are appointed these days. It may be that our professional schools can give more attention to such regulatory career training, in the future.

However, in the final anaysis, the regulatory appointments are only going to be as good as appointive powers that make them, plus the important consideration of adequate appropriations. We cannot expect good men on our commissions and their staffs at wages that would hardly be attractive to a deputy sheriff. As long as we allow regulatory salaries to drag along at subnormal levels, there is the ever-present danger of getting political hacks and quacks and demagogues.

Challenge Wrong Principles

That leads me to the second point, about getting the best principles adopted. I am not speaking necessarily about changing regulatory statutes, although that may be necessary once in a while when a law has grown very much out of date. I refer to the courage which management must exhibit, now and then, in challenging strait-jacketing principles in the light of long over-due change. We all know that it is sometimes easier to agree with a commission to get a quick half-a-loaf rate increase than to go after a realistic overhaul of the rate formulas. Take, for example, the matter of straight-line original cost amortization for depreciation during an inflation.

For years I have read and listened to some learned authorities dismiss any proposed change in this department as if it were reactionary, discredited or worse. Yet, within the past year, I have had occasion to write about the British Post Office and the Swedish Government being obliged to go on a replacement basis for depreciation requirements of their government-owned telephone services. Yes, it takes time, tact, and money to challenge and upset some of the hard and fixed theories which were fostered on the regulatory authorities of the country by academic pronouncement during the depression period of falling prices.

In those days, management was too worried about holding the line against rate reductions to challenge principles with expensive and time-consuming court appeals. Today, when these same principles have the advantage of two decades or more of unquestioned authority in some states, they face a hard, uphill task, but one which may well have to be undertaken in the interest of self-preservation.

Finally, on the third point—of co-operation — management has another

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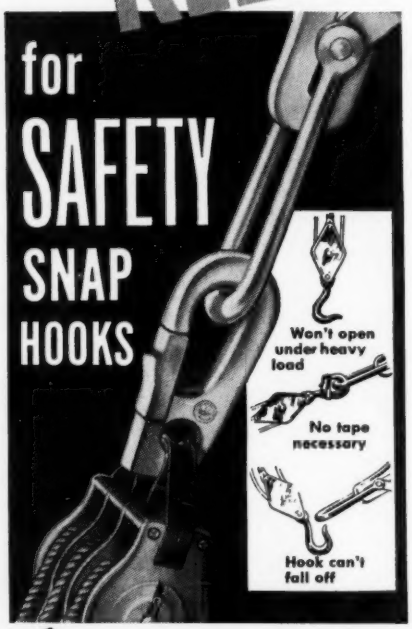

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opportunity to exercise tact toward the regulatory commissions. For obvious practical reasons, no public utility company can make a show of intimacy with the commissioners. Such an attitude could easily do more harm than good. But management can use intelligent judgment in supporting the commissions at the legislative level and in the conduct of rate cases.

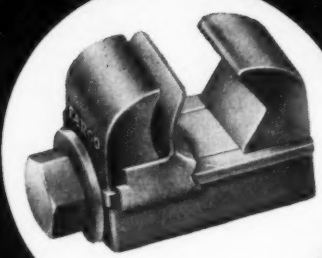
I think most of all we should respect these commissioners and what they stand for. We all know that they are getting more and more responsibilities piled upon them all the time by the court decisions. They are supposed to be experts. They are supposed to know all the facts. Well, what makes an expert—an appointment to a public service commission?

It is easy to be cavalier and cynical in our attitudes towards these experts, perhaps well known to us personally over the years. Maybe we used to work in the same office building, and one morning Tom, Dick, or Harry came to work with the news that he had been appointed a commissioner. Does that make him an expert overnight? Perhaps not. But the office is entitled to our respect, just as if he had been appointed a judge on the bench.

Help Them Learn Jobs

More than that, I think it is a managerial responsibility to assist these commissioners and their staffs, in perfectly proper ways, to learn their new jobs. After all, the turnover on the average commission is rapid and, heaven knows, the work is complicated enough. If management can help, in any way, it ought to. There are opportunities for management to help from the public relations end, when rate increases are necessary. Where, for example, a utility asks for a substantial increase without explaining it to the public, letting the commission take the whole responsibility for what has to be done, management is certainly not cooperating as much as it could.

Other things that could be mentioned along this line would include trying to take short-cuts by avoiding hearings, or putting rate increases into effect under bond. These may be perfectly proper procedures, but they can all be examined in the light of cooperating with the regulatory commission. I would sum it all up by reminding you of the point I emphasized in the beginning, about the importance of regulation to management. The day commission regulation breaks down or loses public confidence, private enterprise in the utility business will not be far behind.



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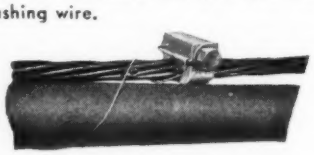

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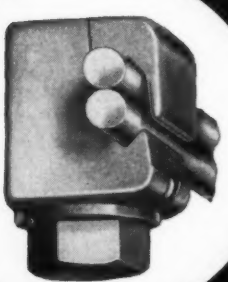

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TELEPHONE FINANCING

Continued from page 38

Then, when the conversion program has been completed and you have paid for the equipment and its installation from the money you have borrowed from the bank, you then issue your long-term bonds and deliver them to the insurance company against payment and then pay off the bank with the money received from the insurance company. This has become a well-established procedure and your financial advisor should have little difficulty in arranging for this bank financing for you. . . .

Preferred Stock

Another instance where short-term financing is suggested is when your debt is already fairly high and when preferred stock cannot be sold on satisfactory terms because earnings are inadequate to provide sufficient preferred dividend coverage, particularly if you have preferred already outstanding.

In this case, you sell fairly short-term notes, which will probably be subordinate or junior in security to the mortgage debt outstanding. The interest on these notes will be a deductible expense and also will probably be at a lower rate than the dividend rate of the preferred, even if you could have sold preferred.

You then use the money to convert to automatic, and when your earnings have increased sufficiently, you will be able to sell preferred stock on satisfactory terms and pay off those short-term notes with the proceeds. And then after this junior capital has been supplied through the issuance of the preferred and the plant account has been increased and earnings are higher, additional long-term bonds can be sold if and when additional capital is required.

Preferred Stock is another source of permanent capital, and is usually sold when additional junior or equity capital is required to maintain a proper balance between debt and other forms of capital.

If the issuing company is large and the proposed issue of preferred is fairly large, say $500,000 or so, the amount can be underwritten by investment bankers and sold to investors generally and those residing in the territory served. And this is particularly true if the company already has preferred stock outstanding in the hands of the public. A private placement of an issue of this size with an insurance company is also a possibility.

But if the preferred issue is small,

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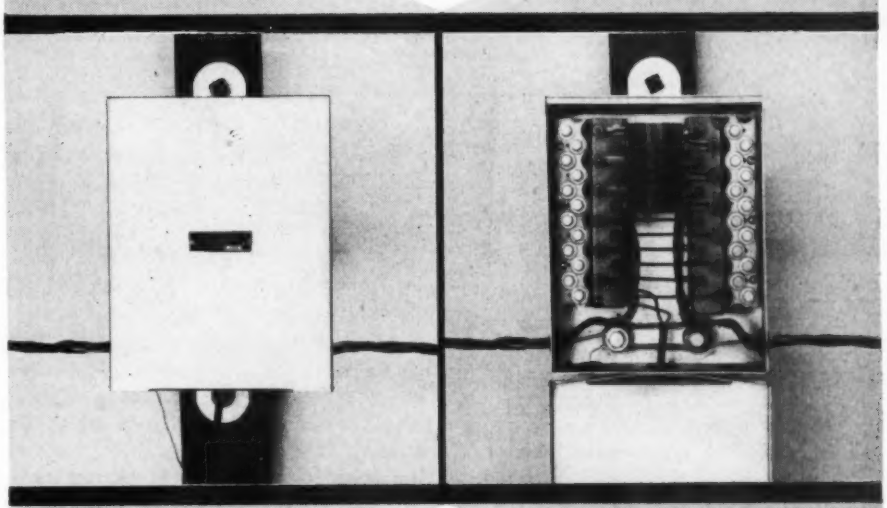

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your local market probably is the best source for this capital, where the company and management is known.

Under these circumstances the company can undertake the sale of the preferred, principally to its subscribers, but here, again, the company can be materially assisted by a financial advisor in making certain that the preferred is properly set-up, and also with the sale of the stock if the investment firm has a trained sales organization working in that territory.

Taxes Is an Item

Common Stock is the fourth and last type of security sold to raise capital. With the smaller companies this is not a very satisfactory source of new money because additional stock would further spread the ownership and reduce the relative ownership position of the present common stockholders. Further, there is the responsibility of maintaining the continuity of common dividends in order to keep these new stockholders happy.

However, in the case of the very large Independents, periodic sales of common stock are necessary to maintain the proper balance between debt, preferred and common when capital must be raised at regular intervals to finance continued growth and expansion.

In these days of high taxes, I'm sure that it's needless to point out the basic difference between debt and preferred, whereby interest paid on debt is deductible as an expense item, whereas the dividend paid on preferred must be paid from net earnings *after* federal income taxes.

To illustrate, it takes only $5.00 of earnings to pay the interest on $100 of debt at 5 per cent, but it takes more than $12 earnings—also before taxes—to have enough left after taxes to pay the dividend on $100 of 6 per cent preferred. This, of course, accounts in part for the emphasis placed upon debt financing during recent years.

The matter of *Timing* is also important in any long-range, carefully-planned financial program. By this I mean issuing the right type of security at the right time.

I believe this is well illustrated by the financial accomplishments of one Independent company, the Texas Telephone Co. Several years ago the company required additional capital for its normal growth and development, and was at that time authorized to issue up to $700,000 or $800,000 of additional debt, thanks to the far-sightedness of the original debt financing, and these bonds could have been sold on favorable terms.

But instead of using up this prime borrowing power, the company elected to issue subordinate debentures in two installments of $500,000 each. Then after this money was spent for new and improved service and after an increase in net earnings resulted, the company then sold $500,000 of 6 per cent preferred to the public.

Then, after six or eight months had elapsed and after earnings had increased further, the company sold another issue of preferred of nearly $250,000. Thereafter, when still additional capital appeared desirable, the company then sold approximately one million dollars of additional mortgage bonds on extremely favorable terms. And an additional issue of preferred now appears next in prospect.

This, I believe, demonstrates the advantages from issuing the right kind of securities at the right time and illustrates a financial program carefully conceived and well executed. We are familiar with these developments because our firm was privileged to handle both of the debenture issues and both of the preferred issues.

Much has been said about *Management* but I can assure you that this "priceless ingredient" — management —is just as important in financing Independent telephone systems as any other form of American business.

The managements of many of our smaller companies are quite capable from the standpoint of operations but have placed too little emphasis upon accounting and other financial considerations. Rate increases have not been sought aggressively enough nor have financial plans been developed to provide the funds necessary for an improvement in service.

Every Independent wants to provide good service, and every territory and community served is entitled to first class service. But to provide this class of service, proper equipment is necessary, proper maintenance is necessary, and adequate payrolls will be necessary.

All of these require money, which revenue can only come from adequate rates; and if these communities want good service, they must be prepared to pay for it.

V V

"It is inconceivable to me that the management talent which created our efficient industrial mechanism cannot, by the same genius, bring about an understanding of the simple truths of that mechanism, a faith in its ability and unwavering confidence that private enterprise is the only economic formula compatible with freedom."—CLIFFORD F. HOOD, *president, United States Steel Corp.*

EFFECTIVE SUPERVISION

Continued from page 48

we easily overlook is the need to be needed, or the need for a feeling that what one is doing has significance or really makes a difference. Practically everyone has this need, but the tragedy is that many, many people in the work situation today do not have the *feeling* of being needed, and hence do not satisfy this need. And, so I should like to ask two questions: First, do you as a supervisor spend a considerable portion of your time in finding or devising ways in which your subordinates can satisfy the need to be needed? Incidentally if you have not been spending time on this and putting forth a lot of effort, the chances are you are not doing a very good job along this line.

And, second, have you spent time and put forth effort to find the ways to motivate people to take advantage of these opportunities when presented? This, too, requires real effort and planning. If you have done these two things well, the chances are that you've been a good supervisor. If you have not done them well, the chances are that there is room for real improvement in your supervisory techniques.

Hard Work Is Still Key

There is certainly no royal road to effective supervision in 1955. Successful leadership of others may come more easily to some people than to others, but the chances are that the good leader of today is a good leader primarily because he works hard at the job of supervising, because he studies and plans and does his best to know his people, both individually and as a group. And, he certainly makes every effort to keep his leadership techniques up to date, to adapt them to the 1955 model of American worker.

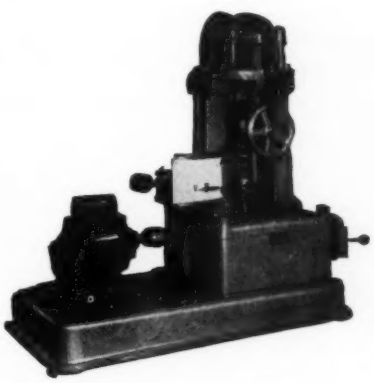
TROUBLE CLEARING

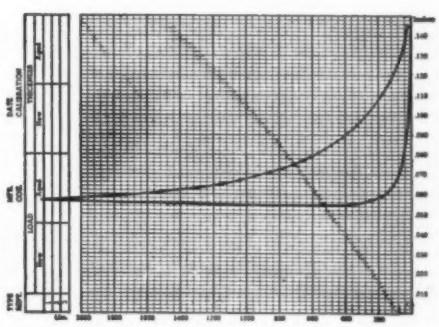
Continued from page 58

of sulphation. Look at the edges of the plates. Are they bent or warped? Are the separators in good condition? How much sediment is in the bottom of the jar? Does it contain lumps or broken pieces of plates?

In these two articles we have tried to outline what we call a "common sense" program of battery maintenance for the smaller companies—a program designed to prevent service failures and prolong the life of the battery. The tests recommended should give timely warning of battery trouble. This program uses a minimum of records

With labor and maintenance costs much higher today than some years ago, it is natural for telephone companies to insist on installing drop wire that will give long service. Dependability in Lowell's complete line of Telephone Wires is assured by a technical staff using many physical tests to determine the effect of heat, aging, tensile strength, compression, cold, acids, oils, moisture and abrasion. Tensile test machine at right which tests for adhesion enables us to guarantee that the adhesion bond between the insulation and conductor is stronger than the conductor itself.





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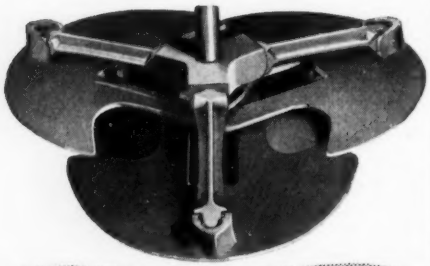
TOUGH FOR LONG LIFE



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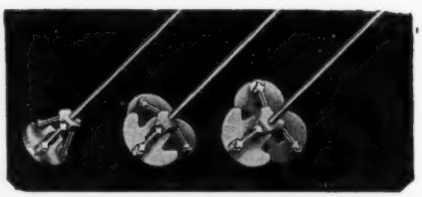

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and a minimum of maintenance time, but, on the other hand, it is a great improvement over the complete lack of systematic maintenance that is too often found in small offices.

Much could be added to what we have said and some readers may not agree with all of our suggestions. If so, this is just one man's opinion but it is based on long experience in battery maintenance.

"GOING LIKE SIXTY"

Continued from page 64

ing safety program completely integrated into a company's overall operation are the only reliable accident waste-reducers.

Gene Daubendiek, plant committee chairman of Iowa Independent Telephone Association, who spoke on "Plant Training Schools," pointed out the need among Independent telephone companies of formalized plant training classes if the telephone industry is to compete successfully in the present labor market. Besides the basic telephone training of employes, plant schools are a convenient method to keep them abreast of the latest techniques and improved products. The final result of an effective program will be better plant, built and maintained by skilled craftsmen, at the lowest possible cost to the telephone company.

Mr. Daubendiek went on to describe a class in cable splicing held at Ames, Iowa, in 1954, under the joint sponsorship of the Iowa association and the Engineering Extension Service of Iowa State College, as typical of the plant training classes that can pay dividends to Independent telephone companies (TELEPHONY, Jan. 22, 1955, p. 26).

The Traffic Conference was led by George W. Quatman Jr. of Lima. The two speakers on the program were Eldon Burgess of Bellevue, who gave a "Report of the Traffic Committee's Participation in District Meetings," and Miss Ruth Richards of Springfield, Ill., who spoke on "The 'Better Mousetrap' Approach."

There was a panel discussion, with Mr. Quatman as moderator. Members of the panel were Robert Coffman of Marion; Mrs. Peggy Campbell of Portsmouth, and Mrs. Bernadette Hogan of Warren.

Following the conferences a luncheon meeting was held with J. Warren Safford, president of the Troy-Tipp Telephone Co., and an Independent pioneer, as the principal speaker.

In an address on "Yesterday, Today and Tomorrow," Mr. Safford traced the history and development of the Independent telephone business, the foundation of which was built with a great struggle on the part of the early pioneers. This struggle, he said has ended in a great victory because the Independent industry has become a vital force in supplying, under private enterprise, the American people with the best and most efficient telephone service in the world.

Mr. Safford emphasized that today there is a demand for still more and better telephone service and it is the responsibility of the telephone industry —both the Bell and Independent segments—to meet this demand of the public.

At the session following the luncheon, Stanley J. Bowers, Ohio Tax Commissioner, explained in detail how the Ohio sales and use taxes apply to telephone companies.

Commenting upon taxes in general, Mr. Bowers urged his listeners to help stop the trend of increased federal taxation so that more money can be kept by local and state governments in order to expand and increase the services for which these governments have the responsibility to perform.

He warned that "we can't have all the revenues from taxation concentrated in and doled out by Washington."

The number one problem in industry today is not of a mechanical nature, but instead is one of human relations, Rev. Philip E. Auer of Galion, told the convention in an address on "The Fine Art of Living and Working Together."

He recommended that to attain the art of living and working together, one must develop four important qualities:

(1) Spirit of cooperation by which one lives "by the rules" and does not expect others to do the things which he will not do.

(2) Sense of appreciation for what employes do for the welfare of their company.

(3) Spirit of determination to get along with "the other fellow" in spite of himself.

(4) Spirit of diplomacy and knowing what to say, how to say it and when to say it.

On the latter point Rev. Auer stated that lack of tact in what we say, how we say it and when we say it builds up walls of separation between people and adversely affects the relationship between people. This applies to individuals in the home; between a company and the public; between employers and employes, or between friend and friend, he said.

At the final general session of the

convention there were three speakers—Mrs. B. J. Myers of Dayton, who is with the Ohio Bell Telephone Co.; Ralph A. Winter of Lodi, O., member of the Ohio Public Utilities Commission, and Daniel W. DeHayes, secretary-treasurer of the Ohio association.

Mrs. Myers, in an address entitled "Diamonds are a Girl's Best Friend," with the aid of motion pictures, gave the history of diamond mining and showed and described some of the famous and well-known precious diamonds in the world.

Commissioner Winter reviewed the minimum telephone service standards which the commission set forth in an order issued last year. These are standards which telephone companies must follow in rendering service. He pointed out that they were promulgated only after representatives of the industry were consulted and said that, in many cases, the "standards" were suggested by the industry.

He explained that the Ohio public utilities law provides that adequate service be rendered to the public and that the commission's minimum standards endeavor to define adequate service.

Commissioner Winter, always a popular guest of Ohio conventions, complimented Ohio telephone companies for their spirit in accepting the minimum standards and in improving their service. He reminded them that there is still much to be done, but predicted that, given time, all of the companies would be able to rehabilitate and expand their plants to meet the public's demand for improved service.

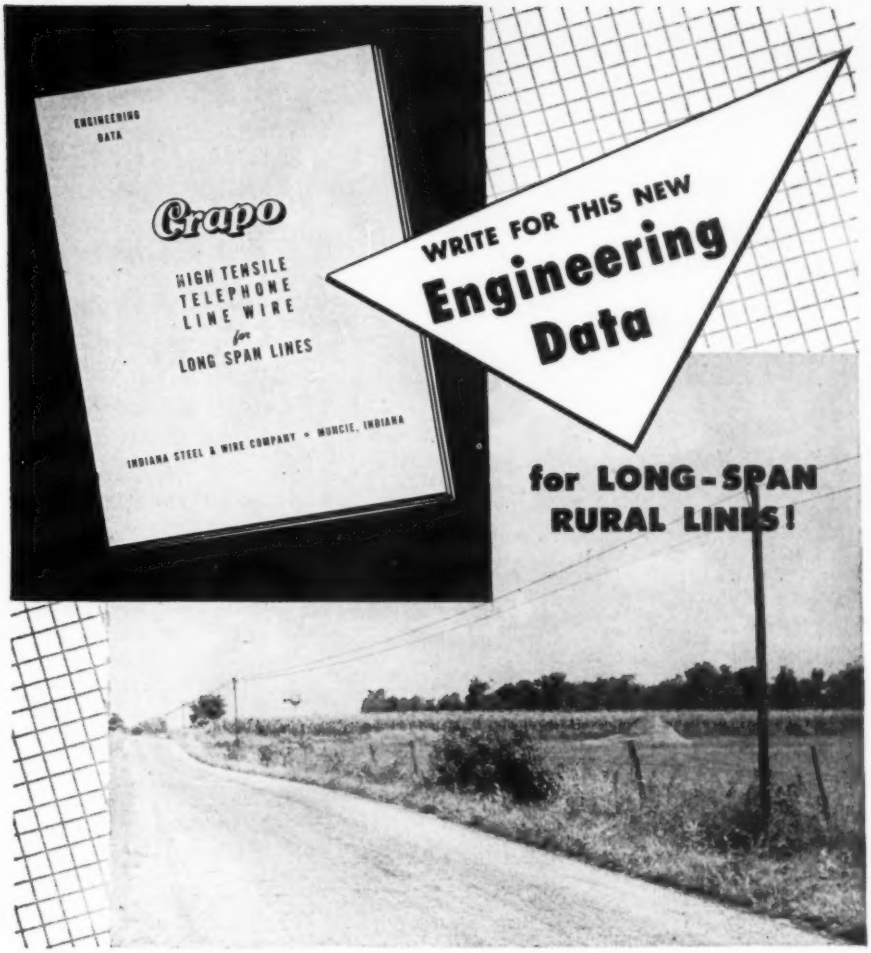
Mr. DeHayes reported on some of the activities of the association during the past year. He stated:

"The year 1954 was a good year for Independent telephony in Ohio. Thirty thousand stations were gained, and an additional 20 million dollars were invested in improvements to inside and outside plants.

"Our member companies . . . have shouldered their share of the responsibility of telling the public what has been done and what the industry plans to do. They have done well with more local news releases, more institutional ads, more photo stories, more open houses, more annual reports, and more speaking engagements before opinion-moulding community groups than ever before."

Speaking of the association's activities in publicizing the accomplishments of the Independent industry in Ohio, Mr. DeHayes reported:

"Our objective continued to be to acquaint the people of Ohio with the Independent telephone story, to inform opinion-moulding leaders of the state of the good things we are doing, to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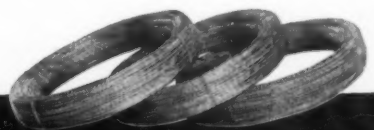
● FEWER pole structures are required where Crapo High-Tensile Line Wire is used in building rural telephone lines. This means substantial savings in time, labor and material. There are fewer holes to dig and poles to set, less material to be handled, installed and connected — all of which contribute to lower overall construction costs.

Crapo High-Tensile Line Wire also makes for lower maintenance costs. Its superior tensile strength offers increased resistance to ice and wind loads . . . provides a greater margin of safety. Heavy galvanized coatings assure dependable, lasting protection.

For maximum savings in the construction and maintenance of rural telephone lines, specify the Crapo Telephone Wire which best fits your requirements.

LATEST ENGINEERING DATA, including Stringing Sags and Tensions, Staking Tables and Guying Tables for Heavy, Medium and Light Loading Districts, are now available. Write today for your copy of Data Book No. N-53.



INDIANA
STEEL AND WIRE CO., MUNCIE, IND.

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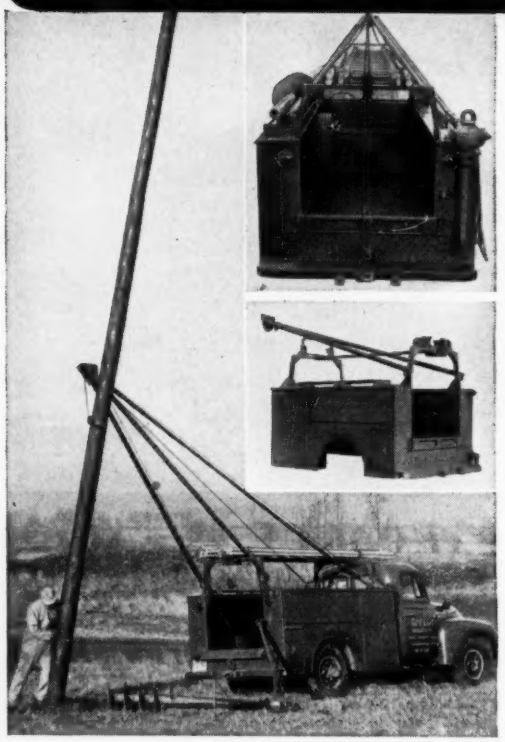
Two-Man
COMBINATION TRUCKS
Pay Dividends



With a ¾ or 1-ton truck and Tel-E-Lect "Combination" Body, you can . . .

- **Dig holes and set poles up to 40'**
- **Handle your regular service work**
- **Reach a variety of jobs quicker**
- **Operate with two men at less cost**

IT'S A COMPLETE PACKAGE, tailored for your make and model of truck. Derrick, winch and digger drive are all assembled to the body, ready for your truck chassis. Easily mounted in a few hours by your local mechanic.

Write for Bulletin

TEL-E-LECT
PRODUCTS, Inc.
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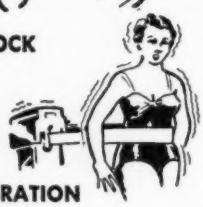
SENSITIVE RELAYS that R-E-S-I-S-T

SHOCK



VIBRATION

TEMPERATURE

NO BIGGER THAN A BOOK OF MATCHES

Here are miniature sensitive relays—single or double-pole types—which fullfill the most rigid requirements of space, shock, temperature and vibration in both commercial and military applications. The Series 100—105—106 relays are hermetically sealed and have a long life expectancy. *Write for Bulletin* **SR—**

Engineering representatives in principal cities.

Wheelock RELAYS
SIGNAL
ENGINEERING & MFG. CO.
LONG BRANCH, NEW JERSEY

offset negative publicity by effectively answering charges made against the industry, and seeing that the industry makes the best use of constructive criticism.

"In detail, here is a résumé of the various public relations projects conducted during 1954-55:

"(1) Our bi-monthly Association publication, 'The Independent Call,' was distributed to 2500 individuals in the state. This publication reports current news of industry progress.

"(2) As soon as the Association was aware of the fact that we were going to again be required to defend the reproduction cost rate base formula in the legislature, steps were taken for the preparation of an inexpensive, but eye catching pamphlet which would give the public a factual understanding of our industry's position on this most complex and technical subject. The end result was the publication of the brochure, 'The A B C's of R C N—34,000 copies of which were distributed throughout the state.

"(3) During 1954, association headquarters made available, through its member companies, (to high school classes in school districts located in Independent territory) a telephone demonstration unit. This unit has been widely accepted for its educational value by both school faculty members and students.

"(4) 'Public Relations Reminder,' our public relations promotional bulletin, has been mailed to company executives throughout the year. This bulletin suggests local public relations projects which member companies can use to gain grass-roots good-will for themselves and the industry.

"(5) In 1954, a monthly cartoon feature entitled, 'Our Ohio,' was sent to editors of daily and weekly newspapers in the state. Each mat covered two items of Buckeye history, geography or economic advancement, with one interesting fact about the Ohio Independent telephone industry.

"(6) The backbone of our public relations program was a constant flow of news and feature releases that told the story of the industry's position and progress. Clippings show that our story has been told more than 40 million times to all segments of the state's population.

"During 1954, the Ohio association established a volunteer speaker's bureau made up of member company representatives who agreed to address audiences on 'The Ohio Independent Story.' A test mailing was made in early January, 1955, to Rotary Clubs of the state. Response from the clubs was excellent, and speakers have been assigned by member companies to fill these engagements. It is planned to afford additional service clubs an opportunity to hear our story during 1955," Mr. DeHayes reported.

The convention was adjourned following a luncheon on Mar. 30, during which the new officers and directors were installed.

The Ohio association, a few years ago, established annual awards for In-

dependent companies which had made marked improvements in their service to the public. These awards called, "Community Service Awards," were were presented at the luncheon to the following: Robert P. Kaufman, vice president of the Continental Telephone Co.; R. N. Cole, president of the Ohio Consolidated Telephone Co. of Portsmouth; M. A. Byrd, general manager of the Mansfield Telephone Co.; Richard S. Zachman, supervisor of information of the General Telephone Co. of Ohio, Marion; H. E. Hageman, president of the Lorain Telephone Co.; Ralph J. Witter, secretary of The Old Fort Mutual Telephone Co. and Carl Depinet, president of the Bascom Mutual Telephone Co.

Presentation of the association's annual "Beyond the Call Award" was also made at the luncheon to Mrs. Mary Tinlin, operator of the General Telephone Co. of Ohio at Carrollton. Mrs. Tinlin helped save the Farmers Exchange Building at Carrollton by summoning police, the sheriff and the fire department, after it had been set ablaze from a blast caused by robbers who blew a safe with nitroglycerine.

The following association directors were re-elected by the convention: H. E. Hageman of Lorain; Gustav Hirsch of Columbus; J. I. Hunt of Middlefield; Col. David McC. McKell of Chillicothe; J. D. Park of Kenton, and C. E. Williams of Marion.

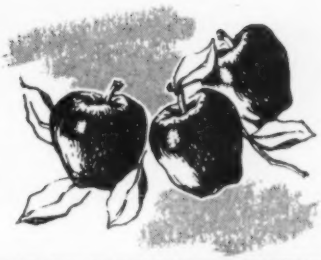
Other directors are: W. W. Case of Hudson; H. F. Clapper of Greenville; R. D. Gott of Wellington; R. S. Jones of Athens; G. B. Quatman of Lima; Yetter Snyder of Chardon; M. A. Byrd of Mansfield; R. N. Cole of Portsmouth; W. C. Henry of Bellevue; R. F. Mateer of Warren; J. Warren Safford of Troy, and R. R. Waltz of Delta.

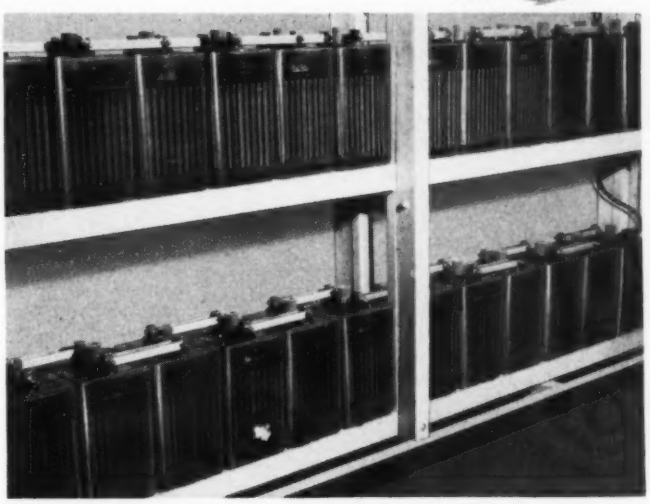
New officers elected by the directors are: President, Mr. Mateer; first vice president, Mr. Case; second vice president, Mr. Hunt, and secretary-treasurer Daniel W. DeHayes of Columbus.

V V

"While we do, of course, operate our business beneath an earnings ceiling, placed there by public regulatory bodies, nobody (so far as I know) has proposed that we ought to have a nice comfortable floor of earnings placed beneath our feet. What I mean is: We must, because of our monopolistic privilege, give up the right to make large profits during boom times. But no one denies us the opportunity of going broke. We may not, in the strict sales sense of the word, be competitive. But we've got plenty of competitive incentive—even if at times it's a negative one."—B. S. GILMER, *vice president, Pacific Telephone & Telegraph Co.*

At Oregon-Washington Telephone Co.





The Oregon-Washington Telephone Co. is proud of their newest installation of C&D Batteries at the Hood River, Oregon plant. The 24 PlastiCal cells, Type PCE-540, have a 540 A. H. capacity.

It's C&D Batteries for EXTRA life

For many years to come, the C&D PlastiCal batteries at Hood River, Oregon, will provide continuous, dependable service. Here, in the heart of the world's most famous apple country, the Oregon-Washington Telephone Co. has found that C&D has the answer to telephone battery needs.

When you order your next telephone battery, specify C&D. For with C&D, you get:

1. **One-piece, permanently-sealed plastic case. Entire unit is shock-resistant and lighter and more compact than glass or rubber.**
2. **Elimination of sudden leaks due to internal stresses.**
3. **Easier maintenance, because patented Post Seal eliminates acid creepage.**
4. **Lower shipping costs. Light plastic case reduces total in-place cost.**

You can order C&D Batteries from your equipment supplier.

C&D

Write for Bulletins!

For details and specifications on C&D telephone batteries, write for Bulletins T-527, T-528.

BATTERIES, INC.

of Conshohocken, Pa.

Manufacturers of Industrial Batteries since 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

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Eliminate GUY GUARD TROUBLES

this easy Flexibal way

1 SLIP OVER WIRE

2 DRIVE HOME NAIL

3 ATTACH CLAMP

"the Economical Guard that can't go wrong"

R.E.A. APPROVED

COSTS 1/3 LESS THAN METAL GUARDS AND NO MAINTENANCE PROBLEM

FLEXIBAL Guy Guards provide the flexibility that yields with the blow and cushions the impact. Made of hardwood, aluminum-painted, they increase the day and night visibility. Easiest guard to handle, simplest and quickest to install—by all odds safest in use, with a proven record of greatly reduced losses. Specify it for better appearance, greater convenience, and major savings.

Used and Praised by Constantly Growing List of Utilities

Write for Free Sample and Prices

IMMEDIATE DELIVERY

TEN COMPLETE SETS IN THIS ONE LIGHT EASY TO HANDLE CARTON

SEE YOUR JOBBER OR WRITE TO

S. E. OVERTON COMPANY

SOUTH HAVEN, MICHIGAN

Pyrene-C-O-Two Companies Elect Laswell, Batch

S. R. Baker, chairman of the board and president of the unified Pyrene Co. and C-O-Two Fire Equipment Co., has announced the election of Maynard A. Laswell to executive vice president in

M. A. LASWELL

full charge of over-all operations. Mr. Baker also announced the election of Ralph F. Batch to vice president in charge of industrial relations and allied activities.

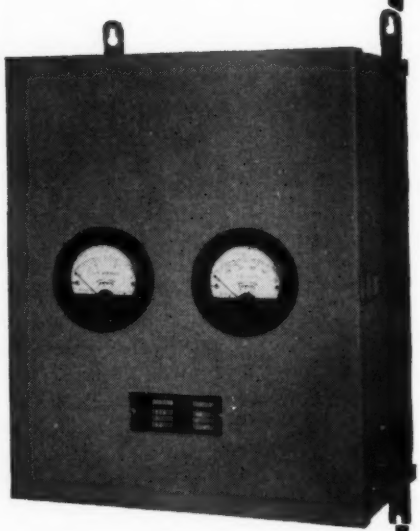
Mr. Baker stated that the new titles and responsibilities for Mr. Laswell and Mr. Batch were necessitated by the unification of the two fire protection equipment producers, which has been

R. F. BATCH

virtually completed. General streamlining and improvement of all facilities are being effected as fast as possible, he said. General offices and principal manufacturing operations are located in Newark, with branches in Atlanta, Chicago, Dallas and Los Angeles, and subsidiary operations in Pennsylvania and Canada.

Dependable Power

for Years- and Years- and Years- of Service!



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In sizes and capacities to meet every telephone power requirement.

See your Schauer Jobber. Write for Bulletin 1465.

RECTIFIER DIVISION SCHAUER MANUFACTURING CORP.

4514 Alpine Ave. Cinn. 36, Ohio

Mr. Laswell was the founder of C-O-Two some 25 years ago. He has been the prime motivating force in the unification program of Pyrene and C-O-Two, it was stated. Prior to his new position, he was vice president in charge of sales and promotion activities. Well known in the fire equipment field, he recently served as president of the Fire Equipment Manufacturers' Association.

In addition, Laswell is currently a member of among others, The Society of Naval Architects and Marine Engineers, Society of American Military Engineers, and The American Society of Naval Engineers.

Mr. Batch has been active in the growth of C-O-Two for 12 years, as well as taking part in the unification program of Pyrene and C-O-Two. Among his duties to date have been personnel director, industrial relations director, assistant secretary and secretary. He is a member of the national executives committee of the Society of Former Special Agents of the FBI.

V V

Stromberg-Carlson Appoints New Value Analysis Head

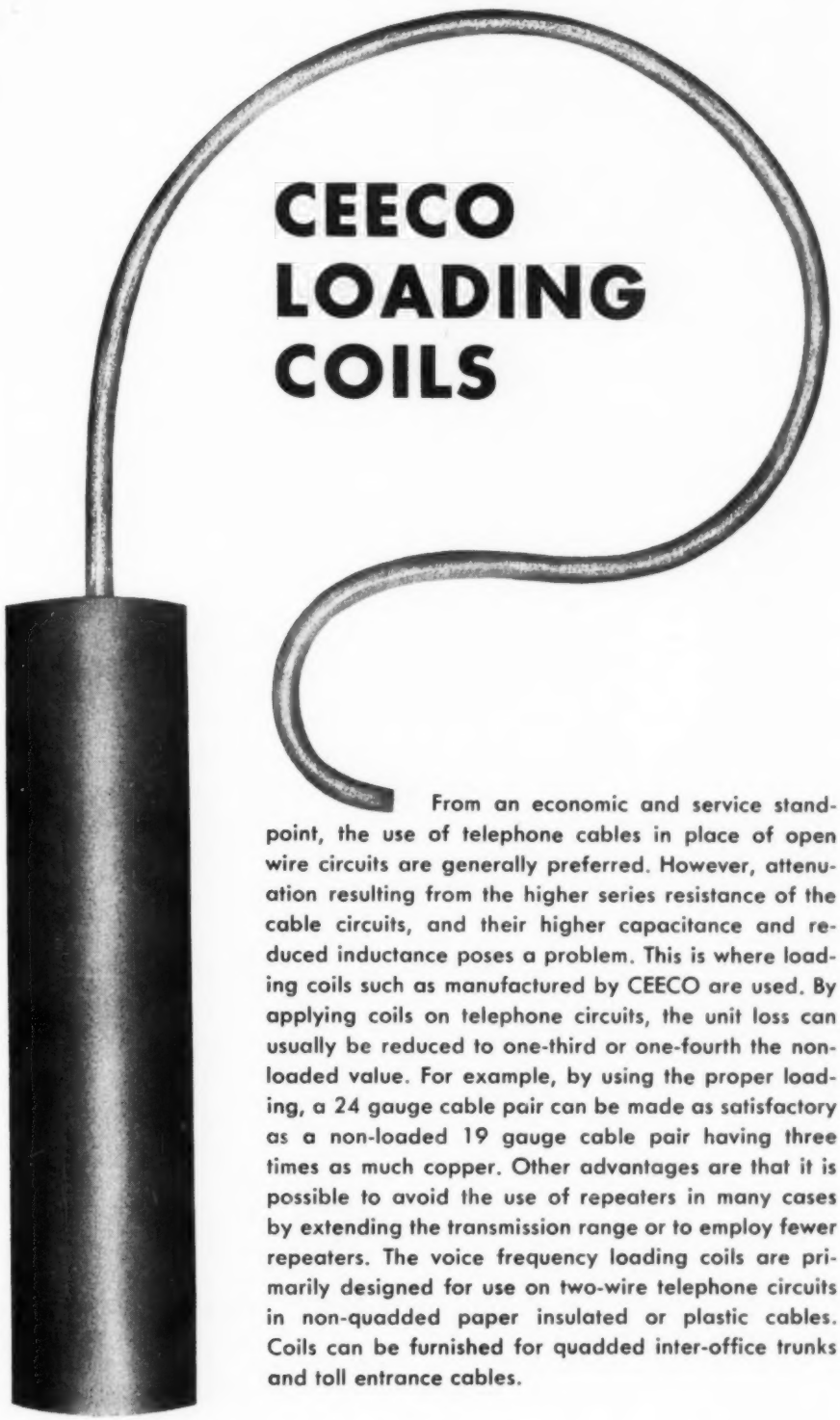
G. G. Hoit, executive vice president of the Stromberg-Carlson Co., has announced the formation of a value analysis department and the appointment of Edward F. Miller to head it up as value analyst.

This department, which is a part of general purchasing, will be responsible for applying a new technique to the investigation and study of materials and products used and produced by all divisions of the company, with the purpose of assisting in cost reduction as it relates to the value received for money spent.

E. F. MILLER

Mr. Miller joined Stromberg-Carlson

You can reduce unit loss and use of repeaters with



CEECO LOADING COILS

From an economic and service standpoint, the use of telephone cables in place of open wire circuits are generally preferred. However, attenuation resulting from the higher series resistance of the cable circuits, and their higher capacitance and reduced inductance poses a problem. This is where loading coils such as manufactured by CEECO are used. By applying coils on telephone circuits, the unit loss can usually be reduced to one-third or one-fourth the non-loaded value. For example, by using the proper loading, a 24 gauge cable pair can be made as satisfactory as a non-loaded 19 gauge cable pair having three times as much copper. Other advantages are that it is possible to avoid the use of repeaters in many cases by extending the transmission range or to employ fewer repeaters. The voice frequency loading coils are primarily designed for use on two-wire telephone circuits in non-quadded paper insulated or plastic cables. Coils can be furnished for quadded inter-office trunks and toll entrance cables.

WRITE FOR CIRCULAR 654-A

BUCKEYE TELEPHONE & SUPPLY CO.

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1. BASHLIN Quality Tool Buckets . . . (Built to Last Longer) The original Fibre Top Buckets

2. Good, Tough Buckskin Work Gloves

3. BASHLIN Quality Boots and Footwear

4. BASHLIN Quality One Piece Steel and Adjustable Aluminum Climbers with Replaceable Gaffs

5. BASHLIN Body Belts with additional Nylon Safety Feature

6. BASHLIN Leather and Nylon Safety Straps

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Ask for . . .
CATALOG NO. 55

W. M. BASHLIN CO.
GROVE CITY, PA.

in 1944 following extensive industrial and sales management experience with Miller Franklin Co., R. H. Macy & Co., and Anderson Nichols Co., all of New York City, and the Hickok Mfg. Co. of Rochester. At Stromberg-Carlson he was in charge of market research for the radio-television division for four years before becoming a member of the general purchasing staff, where he has been involved in government priorities, and special purchasing assignments.

Born and educated in New York City, Mr. Miller attended Stevens Institute of Technology, majoring in mechanical engineering, before joining the army during World War I, where he served as pursuit pilot in the U. S. Army Air Service, with nine months of active combat duty in France.

V V

E. R. Safarik Appointed Leich Assistant Chief Engineer

Leslie H. Warner, president, has announced the appointment of E. R. Safarik to the position of assistant chief engineer of Leich Electric Co.

Mr. Safarik is a veteran with the Leich organization, having joined Leich's engineering department in 1936.

After various positions in apparatus design and development, Mr. Safarik

E. R. SAFARIK

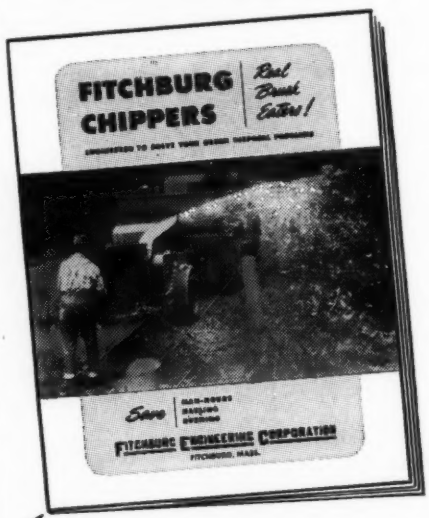
was appointed chief of inspection during World War II. In this position he organized the factory quality control group.

After a period in which he acted as a liaison man between the manufacturing and engineering departments, Mr. Safarik, in 1948, was placed in charge of telephone instrument design.

His present duties also include working in an advisory capacity on special

Save-

MAN HOURS HAULING BURNING



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LOW-COST BRUSH DISPOSAL

Read how leading tree surgeons, power companies, municipalities, utilities use Fitchburg Chippers to cut disposal costs up to 50%—create customer good will.

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processes involving organic and inorganic finishing, heat treatment, and materials selection.

Previous to his employment with Leich, Mr. Safarik was with the engineering department of the Western Electric Co. He also worked as assistant to the chief chemist at the Automatic Electric Co.

Mr. Safarik is a graduate of the University of Nebraska. He is a member of the Sigma Tau engineering fraternity, Western Society of Engineers, American Society of Testing Materials, and The American Society for Quality Control.

V V

Three Automatic Engineers Give Papers at AIEE Meeting

Three Automatic Electric Co. engineers presented papers at the southern district meeting of the AIEE (American Institute of Electrical Engineers), St. Petersburg, Fla., on Apr. 13-15.

J. N. Petrie, manager, carrier and radio sales, presented a paper entitled "Outside Plant Considerations in Applying High Frequency Carrier Systems."

T. B. Collins Jr., division manager, carrier and radio sales, presented a paper entitled "Solving Noise and Crosstalk Problems with Compandors."

R. R. Sanders, International Automatic Electric Corp., presented a paper on the "Type 45 Universal Carrier Equipment."

Each of these papers is available on request from Automatic Electric Sales Corp., 1033 W. Van Buren St., Chicago 7, Ill.

* * *

In his paper, Mr. Petrie calls attention to the growing demand for more inter-exchange telephone trunks, and points out that the greatly increased costs for labor and material over the last 10 years together with development of relatively economical high frequency carrier systems, often are accompanied by problems in adapting existing line facilities for operation at higher frequencies.

He then briefly discusses the characteristics at these frequencies of the several types of line facilities commonly available, touches on the possible suitability of these facilities for operation "as is" at these carrier frequencies, and concludes by outlining the steps necessary to assure the most effective and economical operation in any given situation.

* * *

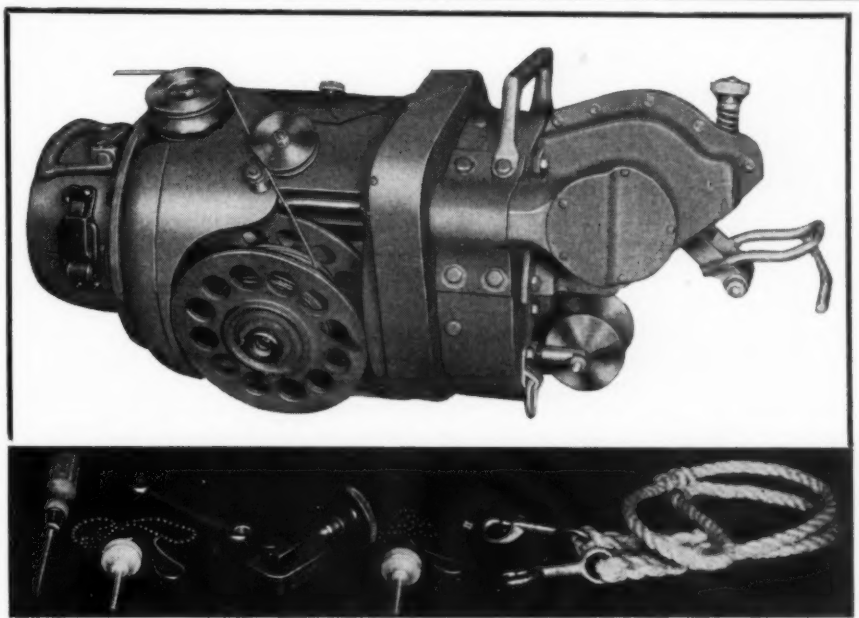
Mr. Collins, in his paper, notes that as a result of the increasing importance of solving noise and cross-talk problems in present-day communication, compandors are creating unusual interest as possible solutions in many instances. Taking notice that the nature of compandor application is frequently not fully understood, Mr. Collins analyzes many of the questions regarding the compandor's use, describes how the compandor works, and then discusses methods of applying them in various communication situations, including their application on physical, carrier and radio facilities.

* * *

Mr. Sanders deals with the problems carrier engineers are faced with due to the rapid expansion that has been necessary in recent years to keep pace with customer long distance traffic requirements.

After pointing out that, in the past, separate carrier equipments were developed to meet the special requirement for each transmission medium, Mr. Sanders then develops the concept of a "universal carrier equipment" that can be used on open wire, cable or radio transmission media merely by selecting the proper plug-in units to meet the special requirements of the particular transmission medium.

He shows how this technique allows



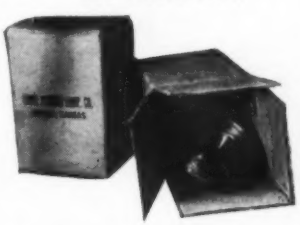
This Package Brings You Up to 67% Savings in Outside Plant Maintenance

When you specify spun cable to protect your outside plant investment, insist upon the Neale Model "D" Spinner. It comes to you complete, with all of the accessory tools to service and maintain the machine. And you can work toward a saving in outside plant protection of as much as 67 per cent . . . the experience of telephone companies in cable spinning, reported from all over the country.

Cable spinning is fast . . . economical . . . and practical . . . for new construction as well as maintenance. You get all the possible advantages of cable spinning when you equip your crews with Neale Cable Spinners. Both the Model "D," shown above, and the Model "B" One Man Cable Spinner are supplied to you complete in every detail . . . no extras to buy.

The Cable Spinning Company maintains an around-the-clock service in spare parts. For complete information on Cable Spinning tools, write or phone your jobber today.

For Best Results Use Neale Wire



Available in 7 different types . . . all made to meet the toughest construction and corrosion problems.

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Designed for Telephone Companies

QUIET — STURDY — EFFICIENT

Especially for **quiet** zones — ideal for residential areas. Equipped with quiet accessories, including muffler and hand throttle.

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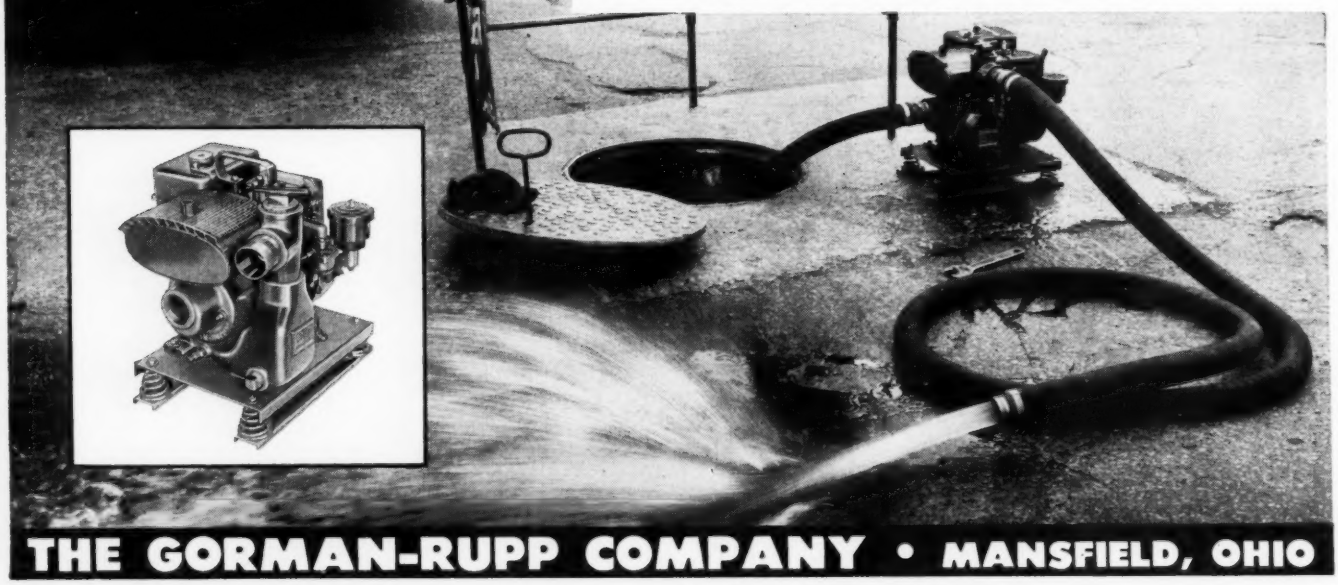

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The Following Can Be Furnished in "J" or "K" Type PBX Switchboards:

- **Magneto Switchboards**
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- **50 Line PABX Relaymatic**
- **Spring and Lamp Jacks**
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- **Central Office Protectors—** (Cook, Western Electric and Reliable Electric)
- **Line Terminal Blocks for MDF**

If you are planning on a dial conversion and want to get your outside plant in shape before installing dial central office equipment, Kellogg Rebuilding Department will rent manual central office equipment until installation is made of new equipment.

KELLOGG — IT&T

Address All Inquiries to:

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Telephone Signs

- **Never fade, rust or stain**
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- **Highest quality—fully guaranteed**

Over a half-century of experience is reflected in the design and manufacture of Ing-Rich porcelain enameled telephone signs.

Three representative Ing-Rich Signs for independent telephone companies. Beaded surface increases night visibility.

Member, Sign Division, Porcelain Enamel Institute, Inc.

INGRAM-RICHARDSON MFG. COMPANY

BEAVER FALLS, PENNSYLVANIA

interconnecting of intermediate carrier frequencies at the junction point between any of the media without resorting to "back-to-back" connection of terminals at voice frequencies.

Other features of this new equipment concept such as automatic level regulation of each channel, miniaturized plug-in units, components and sub-assemblies, and a new modulation plan are also discussed.

V V

Name Assistant Treasurer of Stromberg-Carlson Credit Corp.

Robert M. Meyers has been appointed assistant treasurer of the Stromberg-Carlson Credit Corp., according to an announcement made recently by Gordon G. Hoit, president of the credit corporation, and executive vice president of the parent company.

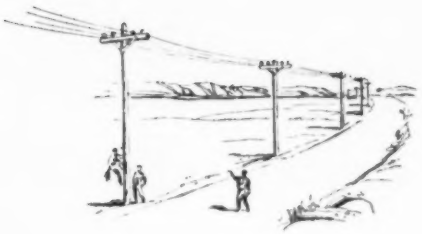
Mr. Meyers graduated in 1936 from Cornell University, where he majored

R. M. MEYERS

in economics and business administration. Prior to joining Stromberg-Carlson in 1944, he was employed by the city of Rochester, and the Bausch & Lomb Optical Co. He also served during World War II in the U. S. Army as a training officer at Fort Bragg, N. C., following graduation from the Field Artillery Officers Candidate School at Fort Sill, Okla., and the Fort Bragg Field Artillery School.

His experience at Stromberg-Carlson includes assistant chief, order and billing department; manager, priorities department; credit manager of the Kansas City branch of the Stromberg-Carlson Co.; and credit and office manager of the company's Pacific Coast branch at San Francisco. Since July, 1951, he has been associated with the Stromberg-Carlson Credit Corp., which has its headquarters in Rochester.

ECONOMICAL



The low first cost and long life of Armstrong Glass Insulators mean real economy. You'll find they're built to last . . . to resist weathering, thermal shock, and other severe service conditions.

For information, write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Ave., New York 16, New York.

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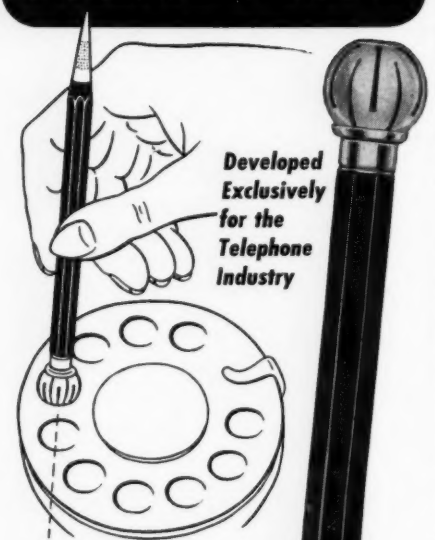
The Standard of the Telephone Industry

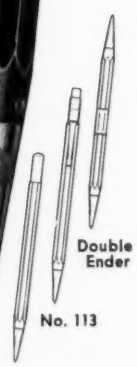
DUR-O-LITE
DIALING PENCIL



Developed Exclusively for the Telephone Industry

- **QUIET DIALING . . .** Stainless steel dialing-ball segmented to eliminate metallic tone.
- **CAN'T SCRATCH . . .** Dialing-ball revolves freely . . . won't deface dial or finger-wheel.
- **STURDY . . .** Nickel-silver base of dialing tool permanently mounted upon bakelite barrel of pencil.
- **DEPENDABLE WRITING** Lead held firmly in writing tip . . . no side-slap . . . no back-lash.
- **BIG LEAD CAPACITY** Leads feed consecutively, one after another . . . reloading frequency minimized.
- **CHOICE OF LEADS . . .** Dur-O-Lites are provided with mechanisms for either standard diameter (.046") leads or extra thin (.036") leads.

No. 183 ACTUAL SIZE



Double Ender

No. 113

No. 108

Other styles for the industry: Traffic Pencil No. 108 (= B.S.S. No. 8-B) for manual boards; Clerical Pencil No. 113 (= B.S.S. No. 13-B); Double-Enders, with choice of 2 colors of lead in either end; Leads all grades and colors.

Write for samples and quotations on Company letterhead. Please indicate styles and probable quantities required.

DUR-O-LITE
PENCIL COMPANY
Manufacturers of Fine Mechanical Pencils
MELROSE PARK, ILL. • TEL. FILMORE 4-7600
(On the edge of Chicago)

North Electric Announces Three Sales Appointments

North Electric Mfg. Co., Galion, O., has recently appointed three new salesmen to their telephone division, D. F. Snyder, sales manager of that division, announces.

Robert L. Dunn, whose sales territory includes Maryland, Virginia and

R. L. DUNN

North Carolina, will work out of the Atlanta regional sales office. He was formerly vice president and assistant manager of Citizens Telephone Co., Brevard, N. C.

Robert J. Olmutz will represent the

R. J. OLMUTZ

North Electric company in Indiana and Illinois. Formerly a sales correspondent in North's power control division, Mr. Olmutz has also served with the Capital City Products Co., Columbus, O., as sales representative, and with Dunn & Bradstreet as a reporter.

Robert H. Millner, whose sales territory is the state of Wisconsin, will work out of North's Minneapolis regional sales office. Formerly sales manager for Paschke Mattson Co., Grand Rapids, Minn., Mr. Millner also served with Walker (Minn.) Telephone Co., in charge of maintenance of central office equipment, and with Bertha (Minn.) Telephone Co. as a lineman.

R. H. MILLNER

V V

IT&T's Jacob Elected President Argentine-American Chamber

The election of Leonard Jacob II as president of the Argentine-American Chamber of Commerce, Inc., to succeed Daniel A. del Rio, vice president of Hanover Bank was announced recently.

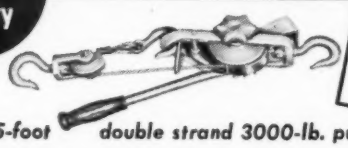
LEONARD JACOB II

Mr. Jacob, who is a vice president of the International Telephone & Telegraph Corp., also served as president of the chamber for the years 1947-49.

H. W. Balgooyen, vice president and secretary of the American & Foreign Power Co., Inc., continues as a vice president of the chamber. New vice

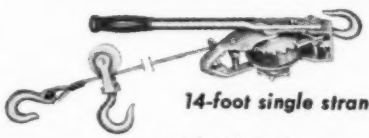
ACCO Quality

Wright Type "R" PULL-A-WAY



only $29.75 each

5-foot double strand 3000-lb. pull



14-foot single strand 1500-lb. pull

Weigh less than 9 pounds

Sturdy · Light · Safe · Economical

Here are some of the fine features of WRIGHT Type "R" Pull-A-Way: Drop forged ductile aluminum alloy frame • Wire hoist cable of maximum strength and flexibility • 8" minimum handle movement—for close hook-ups • 2" drum hub for cable • No oiling needed • Drop forged steel hooks • Removable, reversible "Safety Handle" that bends before any part of hoist is overloaded • Automatic load lowering, with positive control for safety • No slipping brakes • Low first cost • Simple, rugged repair parts easy to install ...factory service never required.

Write our York, Pa., Office for Bulletin DH-163A for full story

ACCO

Wright Hoist Division
AMERICAN CHAIN & CABLE

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

for Better Values

SERIES OF BOOKS ON

Foremanship and Supervision

by HARRY C. WALKER, Ph.D., *Plant Training Supervisor*
SOUTHERN BELL TELEPHONE AND TELEGRAPH CO.

In these three books Dr. Walker gives us the fruit of a quarter century of experience as a craftsman, foreman, engineer, supervisor, conference leader and teacher in industry. Written in simple, straightforward English they have been recognized as outstanding manuals for training foremen and supervisors.

★ **ORAL EXPRESSION IN SUPERVISION** is designed to aid the foreman in making talks to his men, leading conferences, teaching industrial subjects and holding interviews. $1.00 each.

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TELEPHONY PUBLISHING CORP.
608 SOUTH DEARBORN STREET CHICAGO 5, ILL.

"Tops" IN THE MONEY-SAVING BRACKET

CASE ALUMINUM TRANSPOSITION POINT BRACKETS

Weighs about 4 lbs., complete with insulators. Save on maintenance; send for booklet fully describing the Case Aluminum transposition bracket.

Insulators come equipped with rubber bushings which maintain line circuit operation in event of breakage.

Catalog No.	Type	Wire Spacing	Wgt. Per C.
SE-1648	R.H.	8"	220
SE-1780	L.H.	8"	220
SE-1650	R.H.	6"	200
#1088	Glass Insulator (with bushing)		48
RC-1	Rubber Insulator		35

*The above brackets and insulators should be ordered separately.

Sold By Leading Distributors In The United States

Also Available
CASE ALUMINUM TRANSPOSITION SPAN BRACKETS

TRANSANDEAN ASSOCIATES, Inc.
P.O. BOX 214, ORANGE, N. J.
Consulting Engineers and Constructors

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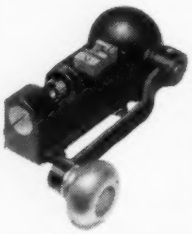
W. E. CO.
EQUIPMENT SURPLUS



No. 444A CORD TERMINAL CRIMPING TOOL. A $90.00 VALUE FOR ONLY ..$39.50

No. 103 COMBINATION WRENCH & SCREWDRIVER FOR ADJUSTING #16 JACK FASTENERS. A BIG BARGAIN AT .....$ .95 EA.

KS-2348 TYPE COMBINATION SCREWDRIVER FOR PLACING SHELL & BINDING SCREWS OF PLUGS AND FOR REPAIRING TINSEL SWITCHBOARD CORDS BY THE PUNCHED HOLE METHOD. AN $8.00 VALUE FOR.....$2.49 EA.

No. 129B WRENCH FOR ADJUSTING ARMATURE PIVOT SCREW NUTS AND RINGER POSTS. SALE PRICE, ONLY .....$ .25 EA.

TERMINAL STRIPS, MOST ALL SIZES AND COMBINATIONS, EACH.....$ .25

FREE! FREE! ! A No. 553A LAMP REMOVER WITH EACH ORDER OF $5.00 OR MORE.

ALL OF THE ABOVE ITEMS BRAND NEW AND ARE SUBJECT TO PRIOR SALE.

LINE EQUIPMENT SALES
529 SOUTH DEARBORN STREET
CHICAGO 5, ILLINOIS

presidents are Alfred M. Vinton, assistant vice president of The National City Bank of New York, and Paul J. Quinn, assistant director of overseas operations for Johnson & Johnson. Allen N. Jones, partner, Morgan Stanley & Co., and P. E. Sibilia were re-elected treasurer and secretary, respectively.

V V

Cook Electric Company Opens Indianapolis District Office

Cook Electric Co., Chicago 14, has opened a new district office at 3862 N. Carrollton, Indianapolis, Ind., with H. Weir Cook Jr. as district manager, according to Charles H. Brunell, vice president and sales manager.

H. W. COOK JR.

Mr. Cook was formerly installation engineer with Aero Engineering Co., division of Garrett Corp.

V V

Lenkurt Announces Three Sales Staff Appointments

Three new sales staff appointments have been announced by the Lenkurt Electric Co., carrier and microwave manufacturer, of San Carlos, Cal.

Named to the staff of E. G. Hall, general sales manager, were Harry J. Lewenstein, who is in charge of sales program planning and coordination, and Fred C. Hill, who is responsible for sales training.

Nyal D. McMullin was added to the staff of P. B. Patton, vice president and commercial manager, to head market research activities.

Mr. Lewenstein, an electrical engineering graduate of the University of Minnesota, has been with Lenkurt since 1951. He was the first editor of the company's monthly engineering magazine, "Lenkurt Demodulator," and for the past two years has been manager of the technical news department.

Newly appointed to sales staff positions by the Lenkurt Electric Co., San Carlos, Cal., are (left to right) HARRY J. LEWENSTEIN, sales program planning and coordination; FRED C. HILL, sales training; and NYAL D. McMULLIN, market research.

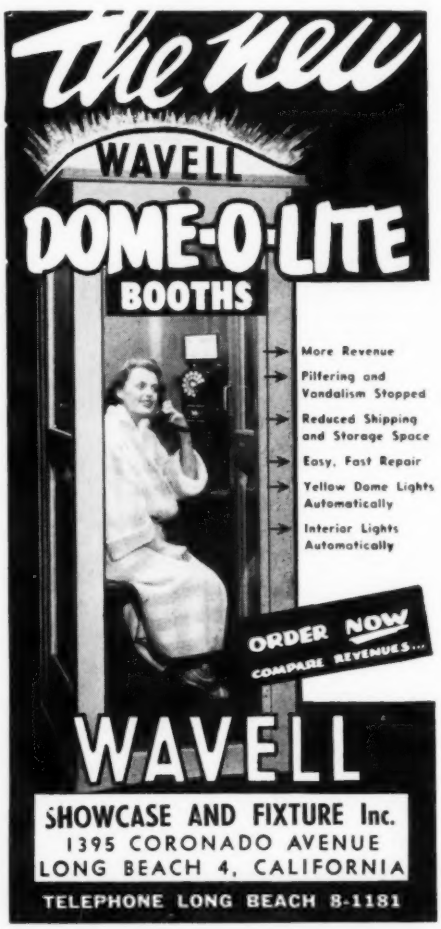
Mr. Hill has handled various assignments in the sales engineering and public relations divisions since joining Lenkurt in 1951. An alumnus of Stanford University, he was with the Western Electric Co. from 1941 to 1950 except for three years as a pilot with the Army Air Force during World War II.

Mr. McMullin recently received his master's degree in business administra-

Porcelain Products insulated screw eyes are made to speed installation . . . provide your customers with continuous telephone service. They're put up . . . to stay up. Hotdip galvanized hooks and screws, plus high grade, glazed dry-process electrical porcelain are quality features offered in both split-ring or solid-ring insulated screw eyes. Write for complete information today!

• PROVIDE CONTINUOUS SERVICE WITH PORCELAIN PRODUCTS TELEPHONE INSULATORS •

PORCELAIN PRODUCTS, INC.
Findlay, Ohio



SHOWCASE AND FIXTURE Inc.
1395 CORONADO AVENUE
LONG BEACH 4, CALIFORNIA
TELEPHONE LONG BEACH 8-1181

tion from Stanford. Before beginning graduate study he was an engineer with the General Electric Co. from 1950 to 1953, and prior to that worked for the Kennecott Copper Corp. He has a B.S.E.E. degree from the University of Utah.

V V

Kentucky Independent Agrees To Buy Another

L. T. Carlson, president of the Calvert City (Ky.) Telephone Co., and William Thomason, owner of Smithland (Ky.) Telephone Co., recently announced that the Calvert system had bought the Smithland company.

Mr. Carlson said a consulting engineering firm had been retained to plan construction of a completely new plant for the Smithland area. It will include a new office building in Smithland and installation of automatic central office equipment.

Transfer of the property is subject to approval by the Kentucky Public Service Commission.

V V

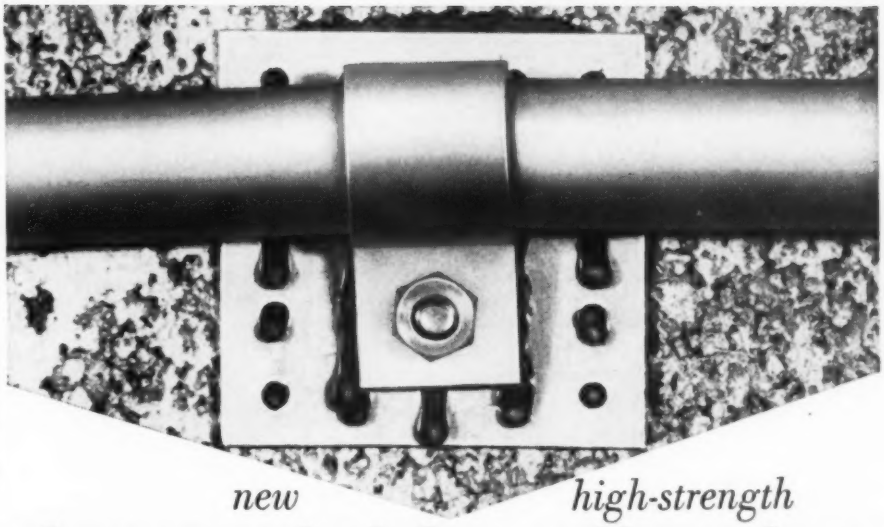
Schedule Hearings on Illinois Company Applications

Applications recently scheduled by the Illinois Commerce Commission for hearing are:

Proposed rate increase for Hardin County Telephone Co. (hearing date: Apr. 22).

Request by Palestine Telephone Co. for approval to buy the Pinkstaff Telephone Co. and Birds Mutual Telephone Co., and for the former to issue a promissory note for $484,000 (hearing, Apr. 19).

WILLIAM H. MESTLER, member of the telephone engineering department at Stromberg-Carlson, retired on Apr. 1, after 36 years with the company. He is a member of the Telephone Pioneers of America, and the S-C Quarter Century Club.



new *high-strength*

dependable adhesive

Service-proved PLACCO 1000

Ask us for references on the long-life holding power of Placco 1000. Other advantages are elimination of drilling; ease of installation in congested areas; low cost; quick setting; adhesion to porous and non-porous surfaces; installation indoors or out.

A complete line of wire and cable hangers is available in either stainless or galvanized steel. Send for bulletins on both adhesive and hangers.

PIONEER
LINCOLN BOULEVARD **LATEX & CHEMICAL CO.** MIDDLESEX, NEW JERSEY

acker

utility digger sets poles in minutes!

The new Acker Utility Digger makes short work of pole setting. Its lightweight, compact design performs perfectly in rugged open country or crowded city streets. The basic unit mounts on jeep or small truck with either self-contained or power take-off.

LOOK at some of the exclusive features of this moderately priced digger.

1. Built-in power hoist and sheave have a capacity of 1500 lbs.
2. High speed auger digs holes up to 20" in diameter and depths of 10 feet.
3. Completely self-contained unit with no extra accessories to buy.
4. Finger-tip hydraulic controls for easy, one man operation.
5. Speedy operation saves time and money.

For complete details, write for bulletin 40-T.

ACKER DRILL CO., INC. 725 W. Lackawanna Avenue Scranton, Penna.

a complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment

news on new PRODUCTS

HERBICIDE—Baron, a non-selective herbicide which brings a new chemical principal to vegation control, is now available for industrial use, The Dow Chemical Co. announces. The new product is a liquid which emulsifies readily in water.

Active material in Baron is 2-(2,4,5-trichlorophenoxy) ethyl 2,2-dichloropropionate, which was discovered as a chemical and developed as an herbicide by Dow research scientists. For convenience, this chemical has been given the coined common name *erbon*. It embodies an important fundamental new chemical characteristic as the basis for its effectiveness. The material was given extensive field tests last year under the code number M-171. Baron contains four pounds of technical erbon per gallon.

Baron may be sprayed on leaves, which take it up directly; or it may be sprayed on the soil, from which it is taken up by roots. Its translocation from leaves is relatively independent of rainfall moisture.

When applied to the soil it acts as a residual sterilant, lasting for approximately a season, its effective persistence depending upon various factors, the company states.

Baron applied to foliage exhibits early contact action which produces a prompt reduction of the vegetation and defines the treated area. This is followed by systemic action which effectively kills most plant species to which it is applied. It has proved to be highly effective against almost all perennial grasses as well as herbaceous plants upon which it has been tested, it is said.

Baron is easy to use in conventional weed-control spray equipment. It presents no problems of corrosion. Its animal toxicity is very low.

Recommended rates of application range from one to two pints per square rod, corresponding to 100 to 160 pounds, erbon equivalent per acre.

Chemically, erbon is unique among weed-killers. Other active herbicidal chemical molecules, for example 2,4-D, have to be combined with molecules of formulation substances which are more or less inert. Erbon is different. While it consists of a two-part molecule also, both parts of the molecule exert herbicidal action, each being toxic to its own range of vegetative types. However, the erbon molecule has proved to be considerably more active than either of its principal components, the company states. Request NP 376.

• • •

ELECTRICAL TAPE — A new pressure sensitive vinyl electrical tape has been developed by the Bishop Manufacturing Corp. for general purpose applications where complete electrical and mechanical protection is required.

The new tape features an improved method of bonding the adhesive to the vinyl that prevents transfer, eliminating objectionable tackiness on the backing and giving greater adhesive strength. This makes it an ideal tape for use on hard-to-get-at installation such as fixture openings, junction boxes and conduits, the company states.

The new vinyl electrical tape is thin, tough and resilient. It can be pulled strongly without breaking to accomplish a very tightly wrapped splice, reducing the bulk of the finished job.

This new tape is available in two thicknesses of 7 and 10 mils. The dielectric strength of the 7-mil tape is better than 10,000 volts. Dielectric strength of the 10-mil tape is in excess of 13,000 volts. Insulation resistance of both types is over 200,000 megohms. These new tapes are available in 20-foot, 66-foot, and 36-yard roll lengths and many widths to meet a variety of service requirements. Request NP 377.

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP376_____; NP377_____; NP378_____; NP379_____;
NP380_____; NP381_____; NP382_____; NP383_____;
NP384_____; NP385_____.

Name..... Title.....

Company.....

Street.....

Town and State.....

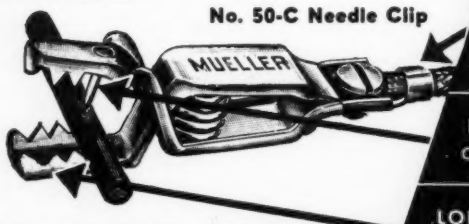
4/23/55

TRY A MODERN LINEMAN'S NEEDLE CLIP!

SEE THE DIFFERENCE "Mueller" MAKES

Send for FREE Catalog No. AA588 and **FREE SAMPLES!**

#50C Clip and #49 Insulator
#60S Telephone Test Clip #62 Ins.
#27 Universal Test Clip



No. 50-C Needle Clip

INSULATORS AVAILABLE—RED, BLACK and new BLUE, WHITE and YELLOW insulators for easier lead identification.

SOLID BRONZE NO AWKWARD PROJECTIONS

CRIMPING EARS RELIEVE CORD STRAIN. BARE WIRE NEVER BENDS.

NEEDLE TRAVELS STRAIGHT. First bite CONNECTS. Does not "arc" or glance.

LONG SLIM ALLIGATOR NOSE. Allows full test clip use—on panel board studs—in ALL tight spots!

Mueller Electric Co.

1586AA EAST 31st STREET • CLEVELAND 14, OHIO

PIKE POLES—The problem caused by the serious shortage of Douglas fir in proper lengths to make one piece pike poles has been solved by the A. B. Chance Co., which uses its hot line tool manufacturing technique for the construction of pike poles from laminated Douglas fir.

The company claims that lamination insures straighter, more uniform poles and increases the stiffness over old,

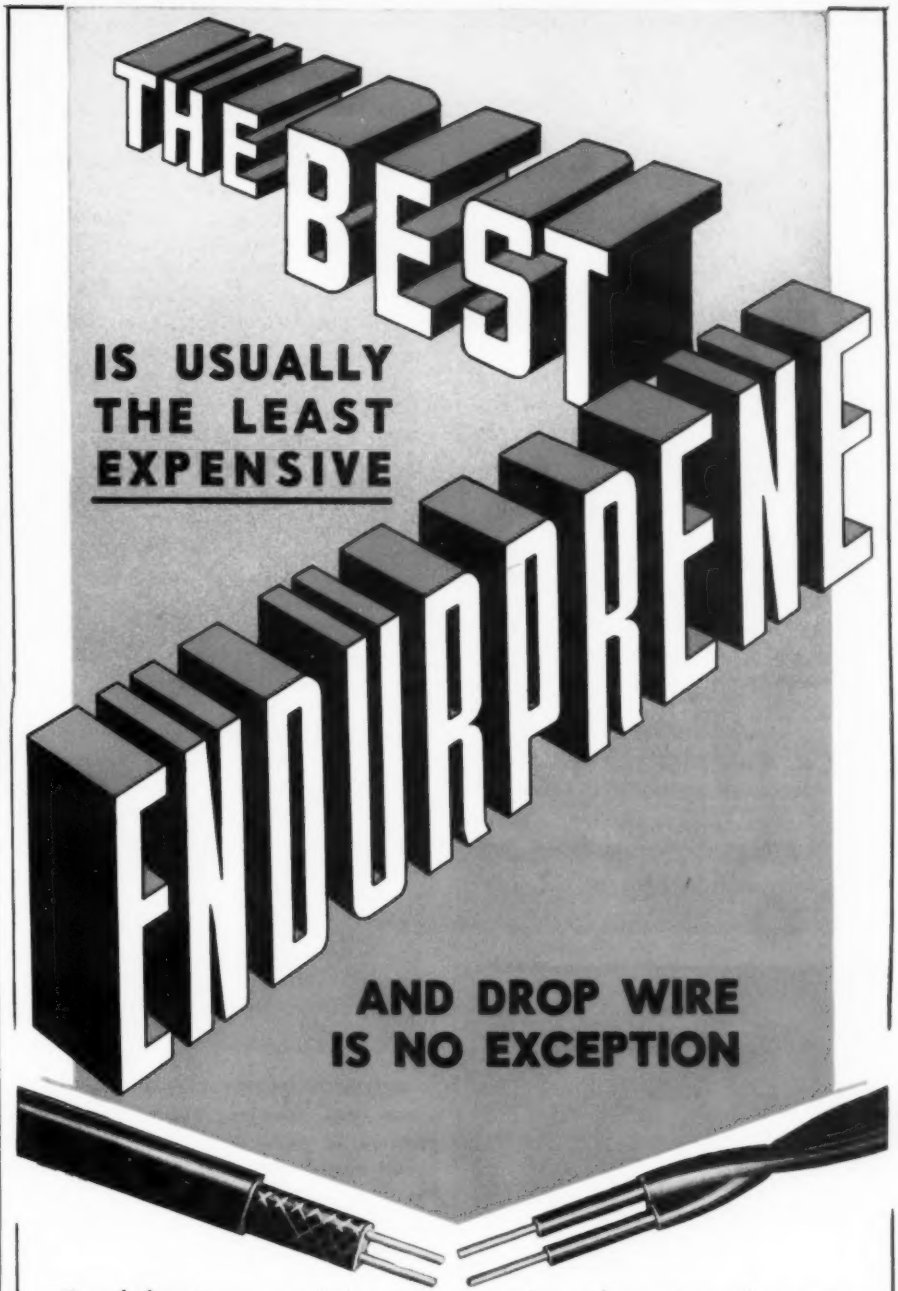
solid poles. Because the grain of the laminated pieces runs in different directions, these pike poles resist splitting, thus reducing the possibility of long, jagged points which are always a menace to linemen. Tests on these new laminated pikes show them to be equal, and often superior, to single board pike poles in all aspects — strength, physical life, etc., it is pointed out.

The 2 inch and 2¼ inch diameter laminated pike poles are made of two or more fir boards bonded together. Three or more fir boards are bonded together to produce poles 2½ inches in diameter. The new laminated pikes will be available in lengths of 10, 12, 14, 16, 18 and 20 feet. A new addition to the line is a 2¼ inch pole available in lengths of 14 through 20 feet. Its strength is greatly increased over the 2 inch size.

Chance Maplac, a tough, moisture and abrasion resistant plastic, is used as a protective coat on these new Chance pike poles. Maplac increases the service life of pikes and adds to their safety. This coating prevents splintering and reduces time lost due to hand injuries. Chance pikes will be bundled in scored fiberboard wrappers for protection against damage during shipment. Request NP 378.

• • •

CORE-MAGNET PANEL INSTRUMENTS—A new line of core-magnet, self-shielded panel instruments in the popular 3½ inch size, which it is claimed affords panel builders and other quality users outstanding economies



Rock-bottom maintenance costs—the aim of every on-the-ball plant executive—come when you buy the drop wire that stays up, year after year, storm after storm.

NEOPRENE!

Ask your own Kellogg man for the whole story. He will be glad to furnish you an interesting box of samples.

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CHICAGO, ILLINOIS

GENERAL INSULATED WIRE WORKS, INC.
PROVIDENCE 5, RHODE ISLAND

ROADSIDE BONANZA!

You'll strike a ROADSIDE BONANZA with more Roadside Pay Stations spotlighted with P and A

Reflectorized P and A TELEPHONE *Signs*

- Booth and Approach Signs
- Weather Resistant . . . Longer Lasting
- Long-Range Visibility . . . Day or Night
- REFLECTORIZED BRILLIANCE with "Scotchlite" brand Reflective Sheeting.

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AND PRICES TODAY
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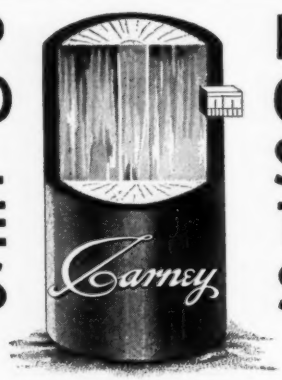
SPRINGFIELD, OHIO

POLES POSTS



Western Red Cedar
Western Larch
Lodgepole Pine

Untreated, Butt and
Full Length Treated

•

FIR CROSS ARMS

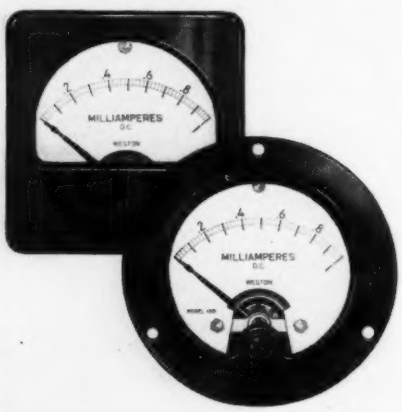
•

B. J. CARNEY & CO.
Minneapolis 3 Spokane 8

both in handling and in initial costs, has just been introduced by the Weston Electrical Instrument Corp.

Known as the 1301 Line, these instruments are available for dc or as ac rectifier type instruments in both round and rectangular shapes.

The Weston Cormag mechanism employed automatically affords excellent



shielding from external magnetic fields and thus eliminates any inter-effect when instruments are mounted close together. They also can be mounted on magnetic or non-magnetic panels interchangeably without need for special adjustment.

Basic accuracy for the 1301 dc instruments is within ±2 per cent of full scale range; and ±3 per cent for the ac rectifier types. Request NP 379.

• • •

MOLDED PLASTICS—A new technique for molding such refractory plastics as pure polyvinylchloride has been announced by Stokes Molded Products Division of The Electric Storage Battery Co. For the first time the new technique permits economical processing of pure non-plasticized polyvinylchloride (rigid PVC) in intricate and complex moldings, not only for large production runs but also for small lots, the company states.

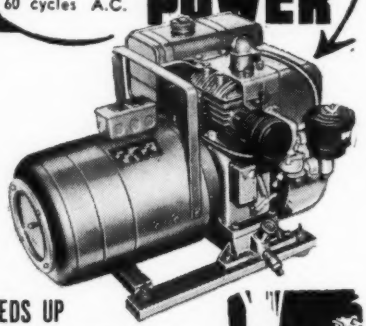
Rigid PVC is well known for its resistance to corrosive fumes and liquids, as well as industrial chemicals, reagents and wastes. Field PVC installations of fabricated sheet stock have been in continuous use in many European chemical plants for more than seventeen years.

Molding compounds of rigid PVC formerly were adulterated with fillers and plasticizers to facilitate processing. This prior technique greatly reduced the plastic's natural chemical resistance and mechanical strength. The new Stokes process solves both problems and permits molding to close tolerances with no more than minor finishing operations. Even fully molded screw

Wherever you are the job is easily done with

Katolight *Portable* **POWER**

60 cycles A.C.



SPEEDS UP
WORK . . . CUTS COSTS!

Construction or maintenance is made simpler, faster and cheaper with a New Katolight Portable Power Plant. Operates saws, drills, hammers, soldering irons and other portable electrical tools and equipment.

Gasoline models from 350 Watt to 50 K.W. DC models 500 Watt through 15 K.W. in standard voltages for continuous or stand-by service. Also Multi-Frequency Ringing Power equipment.

CHAIR TREE SAWS

MANHOLE HEATERS

POWER TOOLS

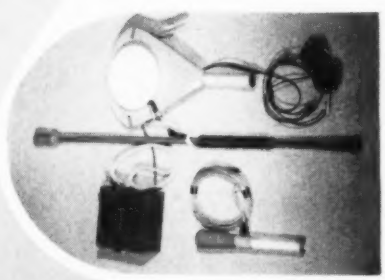
Write
For
Details

Katolight CORPORATION
Box 891-12, Mankato, Minnesota

TELO-CATER*

Patent No. 2142304—Pat. pending
*Reg. U. S. Trade Mark

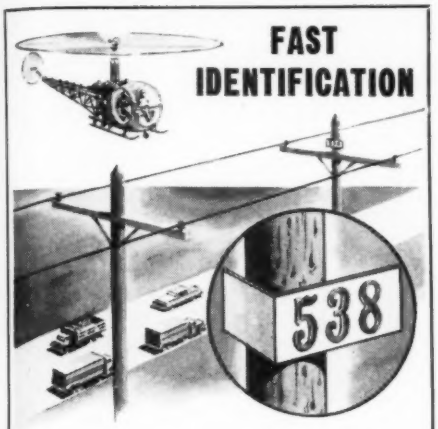
- Locates shorts, crosses, grounds and opens in cable, drops and aerial wire without necessity of climbing poles.
- Cuts trouble shooting time and gas mileage.
- Identifies pairs in cable.
- Locates buried conduit, water and gas pipes.
- Locates concealed wiring between walls in building.



A TELO-CATER unit will save you many hours of line search for trouble spots. It is simple in design, easy to operate, and tone locates line faults exactly.

ORDER DIRECT—All TELO-CATER units are sold with strictest satisfaction guarantee. All orders are shipped direct from the factory. Write or phone for prices and delivery schedule.

CUMMINGS & NOTT
PHILOMATH, OREGON



FAST IDENTIFICATION

POLE NUMBERS FOR AERIAL PATROL BY

"They Outlast the Pole"

PREMAX

Premax enameled and plain aluminum pole markers make aerial trouble spotting fast, easy and economical. Made to withstand any weather, designed for extremely high visibility. For R.E.A., telephone and general utility installations. Ask your jobber, or write

PREMAX PRODUCTS
Div. Chisholm-Ryder Co., Inc.
5567 Highland Ave., Niagara Falls, N. Y.

and bolt threads now are practicable, according to Stokes officials.

In spite of certain undesirable features, earlier forms of rigid PVC have found use in more than 25 basic industries, including electrical and electrochemical. Request NP 380.

• • •

POISON IVY BOMB—The Thompson Chemicals Corp. has announced a "bomb" containing a chemical which will kill poison ivy, oak and sumac plants, when it is sprayed on the leaves. It is harmless to humans. Request NP 381.

• • •

UNDERGROUND DUCT RODDING MACHINE—The Pengo Series 600 duct rodding machine is now in production by Petersen Engineering Co. The manufacturer states that this is an improved

machine for rodding underground telephone ducts or pipes of any kind, and is capable of rodding ducts to a distance of more than 1,000 feet which is substantially greater than any machine now on the market.

This ingenious patented equipment causes the rod to revolve clock-wise in the duct as it pays out, returns or holds the rod steady without shifting gears or stopping. Request NP 382.

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BRUSH KILLER—Standard chemicals in a new formulation developed by American Chemical Paint Co., have given outstanding killing effects on red maple and white oak in tests conducted over two growing seasons, the company claims.

These two woody plants have in the past successfully resisted the same chemicals used in other formulations. Both yielded to the new ACP experimental brush killer—ACP-L-329—used either as a foliage or as a basal spray. At the same time, tests showed that the new formula is effective against plants which have been easily controlled by standard commercial products.

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are not affected by atmospheric conditions. No corrosion or deterioration. Cold flows. A fraction of the weight of metal anchors. Drill hole, then hammer it home. A new line of expansion anchors available soon. Write for information.

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sectional view of 2-Way "Hex" Shank

NEW IRWIN 2-WAY "Hex" Shank Wood Bit

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The new formulation was first tested in July, 1953, by a team of ACP research men on the right-of-way of the American Telephone & Telegraph Co. cable line near Scranton, Pa. The site was selected because of the uniformity of its woody species and the heavy growth of red maple and white oak which have long been identified as persistent scourges. No additional spraying was done on the test plots.

The ACP-L-329 was applied as a foliage spray in some test areas and in others as a dormant basal spray to brush of medium density which averaged about 6,000 stems per acre and stood four to 6 feet high. In these experiments the plant was judged to have been killed when the spray produced defoliation and no subsequent resprouting from stems, lateral rhizomes or root collars occurred in the two year test period, according to the company.

As a result of the foliage spray with ACP-L-329, tests showed a 45 per cent kill on red maple while an identical spraying at the same rate with a standard formulation — Weedone 2,4,5-T which is also an ACP product—produced only a 7 per cent kill.

When applied to white oak under identical conditions, the new formulation produced a 40 per cent kill while a spraying with Weedone 2,4,5-T killed only 5 per cent.

At the same time, black birch which has been traditionally easy to control with standard commercial products, was killed by ACP-L-329 at a rate of better than 95 per cent. ACP research men pointed out that this demonstrates that the new experimental brush killer sacrifices none of the effectiveness of standard chemicals on easy-to-kill species in gaining its ability to cope with the hardier varieties.

In each foliage test a solution of four pounds of brush killer — either ACP's Weedone or the new formulation —was mixed in 100 gallons of water. The difference in rate of kill on the rugged red maple and white oak species was, therefore, judged to be due, not to difference in strength of the spray, but to the difference between the formulation of the new brush killer and the standard commercial product.

In all the foliage tests conducted, all stems, leaves and branches were sprayed to the point of run-off. No attempt was made to spray the ground.

ACP-L-329 was also tested as a dormant basal spray—a spray applied to the base of a plant in the non-growing season. On white oak, similar gains in rate of kill were noted to be still in effect after the second growing season. Formulated at the rate of 16 pounds of brush killing agent in a mixture of 30 gallons of oil and 70 gallons of water, L-329 produced a kill of 48 per cent on the hardy white oak. Exposed to the same formulation and dosage, 80 per cent of the black oak and 90 per cent of the aspen subjected to the dormant basal spray were recorded killed. Here again, the kill was still in effect after two growing seasons, the company states. Request NP383.

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ROTARY CARD INDEX FILE — A new electrified rotary card index file called the Kard-Veyer has been developed by Remington Rand Inc. for rapid reference and posting operations.

The Kard-Veyer contains movable shelves which travel from either direction, bringing the required tray to the

reference area from either above or below, stopping at posting level by automatic leveling. The operator doesn't have to leave her position at the unit because the Kard-Veyer, equipped with chair and posting board, forms a complete and compact work station at which the operator can perform all normal filing and posting activities.

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A foot switch can be installed so that the unit can be operated while the clerk has both hands free for work. A second piece of alternate equipment is a high-low operating switch which will bring one carrier full of trays in the center at convenient standing reference height. Another alternate is a push button selector to get the desired tray directly

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in front of the operator. Request NP384.

• • •

CABLE LASHING METHOD—Channell Splicing Machine Co. has developed a new technique for lashing cables. It consists of a coil spring, placed on the strand before or after the strand is placed; the end of the cable is placed through the spring, the pole-end of the spring is attached to the strand, the other end of spring is attached to the

pulling line with the cable. As the cable is pulled the spring pays out and automatically lashes the cable.

After the complete length of cable is pulled, the slack is pulled up at each pole and the spring is terminated. The

springs are made in 21-inch lengths and will lash a 300-foot span (they can be cut on the job for shorter spans). The only tools required are a cable shoe and a pulling line. This method can also be used for relashing cables. Request NP 385.

V V

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Calculagraphs—Model 6—Case C. Spring Driven @ $15.00 each.
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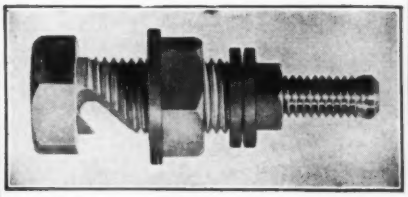

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TWISTED PAIR DROP WIRE
#14 ga. tinned solid copper (hard drawn) rubber insulated, saturated black braid. Unused A-1, 2000 ft. (no-charge reel) ft. 2½c
less than reel, per ft. 3c
Single #14 ga. (as above) for ground wire—4000 foot coils, New A-1 triple braid; ft. 1c

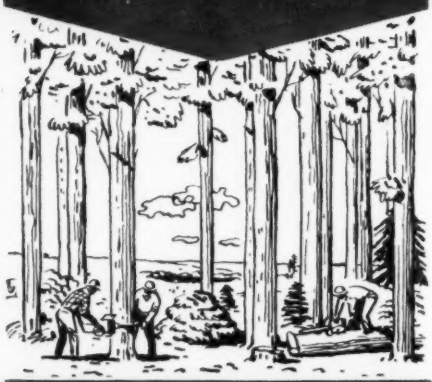
DIRECT BURIAL—parallel pair
#17 ga. copper, Buna or Thermoplastic. 2500 ft. continuous reels, ft. 1¼c (f.o.b. Los Angeles or Chicago).

LEAD CABLE—303 pr. #19 ga. paper
200 ft. length—New W.E. pressurized, no-charge reel. . . .$300.00
BRAID & Lead swbd. cable (ass'd sizes) tell us length & pairs required—we'll quote.

—Samples on request—
We ship on approval—satisfaction guaranteed

Telectric Co.
1218 VENICE BLVD. **Richmond 2249** **LOS ANGELES 6, CALIF.**

...from forest



to finished pole...

One dependable name

DIERKS

From Dierks own Southern Pine forests—one of the largest privately-owned timber stands in the South—Dierks skilled foresters carefully select the trees that will be processed into poles bearing the Dierks name. All the way from the forests, through the processing, through the careful scientific pressure-treating, to the finished product, Dierks poles are grown and handled by Dierks own personnel, closely supervised by trained foresters and wood-preserving engineers. Pressure-treated to your exact specifications with either creosote or penta, you can measure their service life, not just in years, but in decades.

Dierks Forests, Inc.

FORMERLY DIERKS LUMBER AND COAL CO.

Dierks Bldg. Kansas City, Mo.

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Automatic's pointers for plantmen and managers

Protect your underground crews with a "breath of fresh air"

A U. S. Motors gasoline blower circulates 800 cubic feet of air a minute! Blows fresh air down into the manhole, forces out bad air and toxic gases. Underground crews work better with clearer heads safe from dangerous fumes.

Unit runs quietly, too; new patented "silencer" on exhaust makes it an important "goodwill ambassador" in areas where quiet *must* be maintained.

Workmen like this blower's balance and the comfortable cushion grips at top for easy carrying by a single man. Big rubber-cushion mounts soak up destructive vibration, end creeping. Full one-gallon gasoline capacity is enough for 6-hours work without refueling.

The 8-inch diameter Spiratube hose attachment flows the fresh air down into the manhole; extending to 15 feet, it can be directed into low spots to assure desired air circulation. Holds flat like an accordion for easy storage.

Cat. No. 2-2706	Gasoline Blower	Ea. $154.28 (f.o.b. mfg.)
2-2710	Spiratube Hose	64.00

Here's a new "twist" on hoists

The new Coffing hoist is equipped with a coil chain that will twist or wrap in any direction. This greater flexibility makes the hoist very easy to manage, no matter what the slack-pulling job. The handle can be operated on either side of the hoist, in any position, with either full or partial strokes.

Another outstanding feature of the coil chain hoist is that it can easily be converted from 1½ ton to ¾ ton capacity for lighter loads. This doubles the length of lift, gives twice the speed.

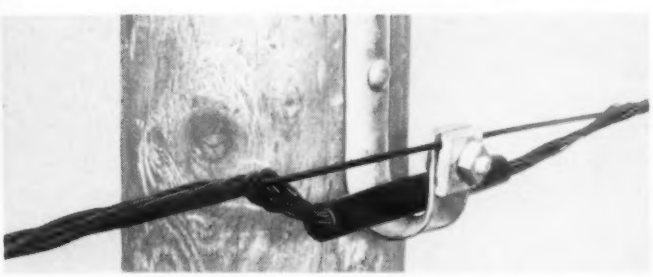
	Each
Cat. No. S-4789	$59.00 (f.o.b. Chicago)

Protect distribution cable at the pole

The type of cable guard that has been used for regular plastic cable can be used also with General Cable's rural distribution cable. It offers positive protection against abrasion, where the cable is clamped to the pole support bracket. For 6-pair rural distribution cable order the ½ inch size.

If your supply of cable guards is low, call up the nearest Automatic Electric warehouse and let them help you stock up for the next construction job.

Cat. No. S-4522 $8.50 per hundred (f.o.b. Chicago)



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NICOPRESS Tool for Compressing Sleeves

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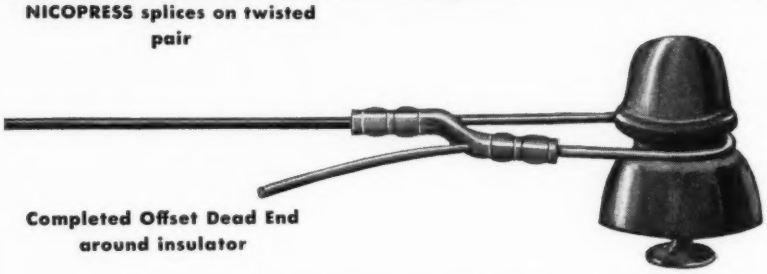
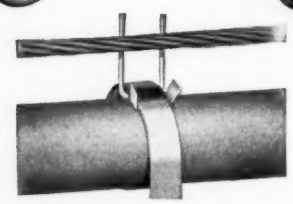
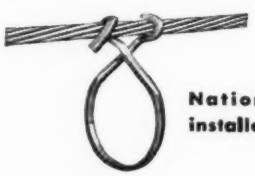


Completed Offset Dead End around insulator

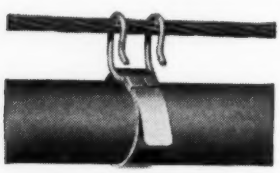


National Adjust-A-Strap, partially installed. Notice split buckle to facilitate wrapping zinc strap around cable

NICOPRESS Reducing Sleeve splice on wires of different sizes (before compressing)

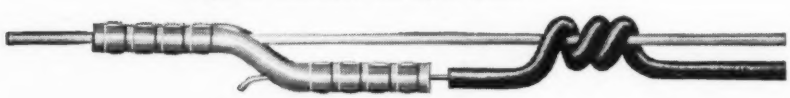


National cable ring installed on messenger



National Zinc-Wrap Partially installed

NICOPRESS Repair Sleeve used to replace defective old style joints



NICOTAP—Split feature permits easy installation on line wire.

Ask Your Jobber

The National Telephone Supply Company

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